



Washington State
Department of Transportation

PUBLIC OUTREACH REPORT

Hood Canal Bridge Closures, August 2005



Hood Canal Bridge Project Office
950 Broadway, Suite 501
Tacoma, WA 98402

February 2006



Table of Contents

Executive Summary.....	4	Measurement: How did we do?	10
Background	4	Goals Accomplished	10
August 2005 Closure Outreach Goals.....	4	First-hand Information	10
		Media Relations	10
Picking the Dates.....	5	Constituent Correspondence	10
Data Collection.....	5	Internet.....	11
Telephone Survey	5	24-hour Information line (1-877-595-HCB2).....	11
Questionnaire	6	Community feedback.....	12
E-mails	6	Traffic Patterns	12
Decision-Making Factors	6	Traffic Data.....	13
Conclusion.....	6	Ferries	14
		Washington State Ferries	14
Pre-closure Outreach Efforts	7	Port Townsend/Seattle passenger-only ferry	15
Tools and Tactics.....	7	Port Ludlow/Kingston passenger-only ferry	15
Media Relations	7		
Internet.....	7	Lessons Learned	16
Tabloid Insert/Direct Mail/Paid Advertising	7	Community Outreach	16
Customer Service	8	Media Relations	16
Partnerships	8	Constituent correspondence to WSDOT	16
Community Relations	8	Internet	17
Correspondence	8	WSDOT Operations/Mitigation Planning	17
Signage/Highway Advisory Radio	8	Ferries	17
Trade/Travel Trades	8	Traffic Patterns	18
		Forecast for 2009 Traffic Patterns.....	18
During and After the Closures.....	9		
Communication Channels.....	9	Recommendations	19
Media Relations	9		
Internet	9	Appendix A.....	20
Customer Service	9		
Signage/Highway Advisory Radio	9		
Partnerships	9		

Executive Summary

This report details the successful public information and public outreach program that took place throughout spring and summer 2005 in advance of, and during, two August closures of the State Route 104 Hood Canal Bridge. The outreach and public information activities included a collaborative process used to select the bridge closure dates; community outreach activities once the dates were chosen; the media relations and public outreach strategies during and after the closures; an evaluation of media and community relations effectiveness; lesson learned from the closures; and, important recommendations for the 2009 eight-week closure planning process.

The temporary closures were a test case for how WSDOT and its contractor might handle the planned eight-week bridge closure in 2009. First-hand information was collected regarding the effectiveness of various communication mechanisms including reports from Olympic Peninsula business, chambers and visitor centers, traffic counts, calls to Hood Canal Bridge information line, ferry ridership, visits to project website and media coverage. This information will be used as the eight-week closure mitigation plan is updated and refined over the next few years.

WSDOT staff learned some valuable lessons in the areas of community outreach, constituent correspondence, the project website, traffic control, media relations, operations, mitigation planning, and ferry service.

While the lessons learned are significant, the eight-week Hood Canal Bridge closure will have a greater effect on the community than the two 2005 temporary closures. The duration of the closures, potential traffic patterns, and the effects on local businesses and mitigation planning efforts will all be different when considering a two-month-long bridge closure.

A list of recommendations has been developed from the lessons learned during the August 2005 closure.

- WSDOT and its partners should evaluate ferry service options using ferry information gathered from the August 2005 closures.
- Mitigation planning and outreach also must continue working with the Olympic Peninsula community through the Peninsula Regional Transportation Planning Organization to update the eight-week closure mitigation plan as needed.
- A better system of reporting traffic conditions near the bridge should be developed before the next closure.

A more extensive list of recommendations are included in chapter six.

Background

The SR 104 Hood Canal Bridge closed twice in August 2005 – two days (50 hours) each time – to allow the contractor, Kiewit-General of Poulsbo (K-G), to replace the bridge approach spans. For more than a year, K-G crews prepared for these closures by assembling the new roadway spans – similar to highway overpass bridges – adjacent and parallel to the existing roadway.

During the rollover sequences, 15,000 to 20,000 average daily trips across the Hood Canal Bridge had to find a different route or not cross the canal. The typical alternate route – driving around the canal using US 101 and State Route 3 – was long.

From January to August 2005, WSDOT's Olympic Region public affairs staff utilized existing communication networks to distribute closure information to Olympic Peninsula residents and visitors. The tactics used during this “grass roots” style campaign enabled WSDOT to accomplish its August 2005 closure outreach goals.

WSDOT conducted a community outreach effort in March and April 2005 to determine which closure dates would least impact Olympic Peninsula residents and visitors. The result was a collaborative process that unified private business and WSDOT public outreach efforts.

Public outreach increased after the closure dates were confirmed in late June/early July 2005. The tactics/tools used included news coverage in trade and travel publications, the Internet, paid advertising, direct mail, newspaper advertising, toll-free telephone hotline, community presentations, correspondence, roadway signage, highway advisory radio, local media relations and the establishment of partnerships with regional public and private organizations.

August 2005 Closure Outreach Goals

- *A well-prepared regional business community.*
- *A traveling public well prepared for the two closures.*
- *Minimized disruption for travelers that were unaware of the closures.*
- *A strengthened sense of public confidence in WSDOT.*
- *Measure effectiveness of various communication mechanisms to assist in planning for the future eight-week closure.*

During the closures, WSDOT communication staff members aggressively pitched local assignment desks and news editors for coverage and were available for media interviews at the job site. Closure and construction information also was provided via the Internet, telephone hotline, signage, highway advisory radio, regional media and from regional public and private organizations.

Picking the Dates

Replacing the approach spans on both ends of the Hood Canal Bridge required closing the Hood Canal Bridge to traffic. The typical approach span replacement process would have taken as much as a year to complete while the existing spans were demolished and the new ones constructed in their place. WSDOT engineers instead pursued a design that would dramatically decrease the amount of time the bridge had to be closed and keep traffic moving to and from the Olympic Peninsula with as little disruption as possible.

The “picking the dates” outreach plan was developed to answer:

- *Should the Hood Canal Bridge closure take place on weekdays or weekends?*
- *Which weekends or weekdays in August or September 2005 would the local community prefer?*

The contract specifications allowed K-G to close the bridge for two weekend closures, 80 hours each, starting at 8 p.m. on Friday evening. In addition, the contract specified that the contractor must notify WSDOT at least six weeks in advance to allow for public notification. In July 2003, this provision was changed to specify that the bridge must be open no later than 4 a.m. Tuesday morning.

In December 2004, K-G issued WSDOT tentative closures dates of 8 p.m. Friday, Aug. 5 to 5 a.m. Tuesday, Aug. 9, and 8 p.m. Friday, Aug. 26 to 5 a.m. Tuesday, Aug. 30. As the closures drew nearer, Olympic Peninsula business leaders voiced concern over the contractor’s proposed closures dates. WSDOT managers met with Port Townsend and Port Angeles chamber leaders to discuss the three-day closures. The group agreed to seek community input.

WSDOT conducted an outreach effort in March and April 2005 to determine which closure dates would least impact the Olympic Peninsula. The result was a collaborative process that unified private business and WSDOT’s outreach efforts.

WSDOT staff worked with the tourism industry, business interests, community groups, local transportation agencies, and the Peninsula Regional Transportation Planning Organization (members include a broad cross-section of community leaders and interests who are focused on transportation issues on the peninsula) to collect feedback on the closures from their constituents. A questionnaire was distributed at two open houses and several community presentations, given to community partners, posted on the project website and printed in *The Peninsula Daily News*, *The Port Townsend Leader* and *The Sequim Gazette*. Several newspaper articles described the outreach effort and how residents could provide comments. A random 400-person telephone survey was conducted to complement the qualitative data gathered.

A total of 904 responses were collected through this outreach effort – 397 telephone surveys, 406 questionnaires and 101 e-mails. The majority of respondents indicated that they wanted the work completed as soon as possible. The preferred closure times were weekends (44 percent), weekdays (32 percent), one of each (13 percent) and no preference (11 percent).

Data Collection

• Telephone Survey

Information was gathered by conducting interviews with people 18 years or older residing in Jefferson, Clallam and Kitsap counties. The interviewing was limited to an area considered the primary geography for communications about the project, defined by: In Jefferson County, east of the Olympia National Park; In Clallam County, east of the City of Port Angeles; and In Kitsap County, including Poulsbo and north of Poulsbo.

Residents were picked from lists of randomly selected published phone numbers in the three counties. The sample was selected to evenly distribute the interviews across the area in proportion to population distribution. The distribution by county was 50 percent Jefferson residents, 23 percent Clallam and 27 percent Kitsap. A total of 397 interviews were completed in late April and the first weeks of May 2005.

RESULTS	TOTAL	PERCENT
One of each	114	29
Weekends	112	28
No Preference.....	89	22
Weekdays	82	21
TOTAL	397	100

Respondents who used the bridge for work had an equal preference for weekend closures or one of each. Respondents who used the bridge for access to medical care preferred weekend closures or one of each. The earliest weekday and weekend options were given highest preference. Those who crossed the bridge 11 or more times in the past month preferred weekends closures or one of each. The top reasons people used the bridge were for optional trips, such as shopping, visiting friends/family and recreation.

SURVEY RESTRAINTS

Many of the questions allowed for respondents to choose all the answers that applied. The survey results then reflected a range of uses for the bridge instead of prioritizing uses.

The randomness of the survey reflected the opinions of Jefferson, Clallam and Kitsap residents as a whole, not just parties who had a vested interest in the closure dates.

The results were from only the people willing to answer a phone survey.

- Questionnaire

Information was gathered by collecting questionnaire forms distributed via open houses and meetings, the website, newspaper ads, mail and community groups.

RESULTS	TOTAL	PERCENT
Weekends	236.....	60
Weekdays	160.....	40
TOTAL	396	100

Respondents who used the bridge for work or access to medical care preferred weekend closures. The earliest weekday and weekend options were given highest preference. Getting to work was the most important reason to cross the bridge for these respondents.

SURVEY RESTRAINTS

The questions allowed for respondents to choose only one answer. The survey results then reflected a prioritization of bridge uses.

This was a self-selecting survey. It reflected the opinions of Olympic Peninsula residents who had a vested interest in the bridge closure dates.

The results were only from the people willing to do a survey online or by mail.

- E-mails

E-mails regarding preferred dates were collected. These open-ended responses offered a variety of opinions.

RESULTS	TOTAL	PERCENT
Weekends	50	50
Weekdays	43	43
One of each.....	6	6
No Preference.....	2	1
TOTAL	101	100

Respondents who used the bridge for work preferred weekend closures. Respondents who relied on tourism for their livelihood preferred weekday closures. The earliest weekday and weekend options were given highest preference. Getting to work was the most important reason to cross the bridge for these respondents.

- Decision-Making Factors

The differences in survey creation and methodology allowed WSDOT staff to evaluate the August Hood Canal Bridge closures from a variety of perspectives. In addition to the survey results, WSDOT collected a full complement of information essential to the complex decision-making required. The other factors considered by WSDOT in the decision-making process were:

Hood Canal Bridge Rehabilitation. The bridge needed to close for approach span replacement.

Washington State Ferries ridership and low-tide information. The ferries served a key role in helping maintain traffic to and from the peninsula during the bridge closures. It was important to avoid placing the closures on the first weekend in August, traditionally among the heaviest travel times for the Washington State Ferries, and the weekend of Aug. 18-20, due to low tides and ferry run cancellations out of Port Townsend.

Contractor Schedule. The work required relatively good weather and the construction timeline indicated August and September would be optimum times for maximizing work force efficiencies.

Olympic Peninsula Events. WSDOT stayed away from weekends when multiple special events occurred.

1998 Origin and Destination Study results. WSDOT consulted traffic patterns reported in this report to help guide closing and opening times.

- Conclusion

WSDOT proposed to K-G closure dates based on the survey and outreach results. K-G agreed upon the specific dates:

CLOSED	OPEN
8 p.m. Thursday, Aug. 11	4 a.m. Monday, Aug. 15
CLOSED	OPEN
8 p.m. Sunday, Aug. 21	4 a.m. Thursday, Aug. 25

Pre-closure Outreach Efforts

An intensive community outreach plan began upon confirmation of the closure dates in late June 2005. The WSDOT team reviewed several years of survey results and identified the most effective ways to reach Olympic Peninsula residents and tourists to the region. Each outreach mechanism was targeted to reach a specific type of bridge user – tourists, crossing the Hood Canal Bridge for social activities and recreational activities, and, residents, crossing the bridge for work, school, medical appointments, business appointments or shopping. The WSDOT team saturated bridge users with information from multiple sources and angles.

The targeted tools and tactics used to reach tourists were news articles in trade and travel publications; the Internet; a toll-free telephone hotline; signage; highway advisory radio; and, the regional news media. Several tools and tactics were added to reach residents including direct mail; newspaper advertising; community presentations; and, partnerships with regional public and private organizations to spread the word.

In addition, an operations planning committee with representatives from the Olympic Region Traffic office, Port Angeles Project Engineers office, Port Orchard Maintenance, Port Angeles Maintenance, Washington State Patrol, Hood Canal Bridge Project office, Olympic Region Work Zone Traffic Control and Olympic Region communications started meeting on a weekly basis in June to implement the three-day closure mitigation plan. The goals of the mitigation plan were to provide advance notification for travelers and help them find alternative travel options. The mitigation plan elements included increasing drivers assistance along US 101, using highway advisory radio, variable message signs and electronic media to share information with drivers, expanding signage at key decision points, coordinating with Washington State Ferries to help driver find alternate route and working with tourism and business interest, local community groups and the PRTPO to distribute information.

This variety of tools and tactics proved to be very effective. Vehicle traffic across the bridge slowed to just a trickle prior to each closure.

Tools and Tactics

MEDIA RELATIONS

Intensive media relations began in August, starting with the media field day on Aug. 9 and continuing through the end on the second closure on Aug. 23. The pre-event media plan included two main tactics – a comprehensive web-based “viewing platform” accessible from the Internet; and a media field day prior to the first closure. The communications team also distributed a pre-event media reminder (July 29 and Aug. 10) as well as a pre-field day media advisory (Aug. 5). The broadcast assignment desks and the news editors at the regional daily newspapers were given an on-call phone list.

Viewing platform (On-line July 29, 2005): The web-based “viewing platform” (www.hoodcanalbridge.com) offered the latest photos from the bridge (updated as progress was made throughout each closure), links to the three-day survival tips page, a detailed work schedule, a media room with press announcements, fact sheets and frequently asked questions, as well as a on-call phone list that provided 24/7 access to communication staff and the project site.

Media field day (Aug. 9): The “field day” served as a “get acquainted” session for reporters and project communication staff. The event’s goal was to familiarize the regional media with the engineering about to be witnessed, the public impacts of the bridge closure and alternate routes for travelers. The event was held at the Kitsap County Park on the canal’s east side. Representatives attended from KING 5 TV, Channel 4 KOMO TV, KIRO, KCPQ, Peninsula News Network, *The Port Townsend Leader*, *The Sequim Gazette* and *The Peninsula Daily News*.

INTERNET

The Internet was a key tool for this project and was used extensively to provide information to the public. WSDOT staff created a three-day closure “survival guide” section of the project web site, www.hoodcanalbridge.com, that included detour route maps, a pre-travel checklist and information about the work at the bridge.

Tourism and travel-related web sites such as Access Washington, AAA, Washington State Tourism, Washington State Ferries, Washington Department of Fish and Wildlife, Olympic National Park, RV parks, Kitsap VCB, Washington State Parks & Recreation, Audubon Society, Mountaineers Club, Blackball Ferry and peninsula recreation-centered websites placed links on their websites, guiding users to the Hood Canal Bridge web page. Internal links were also created from WSDOT’s statewide traveler information web page to the project web page.

TABLOID INSERT/DIRECT MAIL/PAID ADVERTISING

Fifty-thousand Hood Canal Bridge tabloids were inserted in *The Peninsula Daily News*, *The Kitsap Sun*, *The Port Townsend Leader* and *The Sequim Gazette*. Tabloid content covered the project in general, bridge approach span construction, closure information, a detour map and driving directions. The Olympic Peninsula Joint Marketing Association – an affiliation of Olympic Peninsula tourism and travel promotion organizations – distributed additional copies through the Kitsap, Clallam, Jefferson and Mason county areas.

Research from the May 2005 phone survey showed that not all Olympic Peninsula residents are newspaper readers, so WSDOT pursued alternate communication channels.

- The HCB team distributed posters and detour maps on Washington State Ferries, Blackball Coho Ferry and Victoria Clipper.
- A direct-mail piece was mailed to 123,000 Kitsap, Clallam, Jefferson and Mason county residences in late-July.
- The Port Angeles Radio station KONP broadcast 125 radio spots in the three days prior to each closure.
- Full-page color advertisements appeared in *The Peninsula Daily News*, *The Kitsap Sun*, *The Port Townsend Leader* and *The Sequim Gazette* a week before each closure.

CUSTOMER SERVICE

WSDOT staff established a project 24-hour hotline number, 1-877-595-4222 (HCB2). The number was posted on the project web site and on all outreach materials and highway advisory signage. The number was answered by staff from 8 a.m. to 5 p.m. Monday through Friday in June and July and 24-hours-a-day in August. The public was also able to access real-time construction information by calling 511.

WSDOT and WSF staff members worked together to post closure information at WSF terminals; to train WSF customer service representatives to provide information; to distribute posters to passengers riding key ferry routes; and, to distribute information via WSF e-mail subscriber alert system.

PARTNERSHIPS

Community partnerships were key in distributing closure information.

- Kitsap County Visitor and Convention Bureau to provide detour information, local lodging information and telephone contact for travelers that did not realize the bridge was closed.
- AAA included bridge closure information in their monthly magazine and on their website.
- The Washington State Parks & Recreation, and the U.S. National Parks Service and commercial campgrounds included closure alerts in campground reservation confirmation letters.
- Washington Trucking Association, Oregon Trucking Association, Canadian Trucking Association, Idaho Trucking Association, Oregon State Department of Transportation and the Utilities and Transportation Commission – as well as WSDOT Rail and Freight Office – assisted in getting the word out to the freight industry.
- The medical community and emergency services agencies informed patients of the closures.
- Department of Natural Resource and Washington State Fish and Wildlife alerted their customer base of the upcoming closures.

COMMUNITY RELATIONS

A speaker's bureau presentation was prepared for WSDOT staff to provide updates on project progress and the upcoming closure. A postcard was sent to service clubs, chambers of commerce, special interest associations, schools, churches in Kitsap, Clallam, Jefferson and Mason counties. The heavy response yielded requests for seven community presentations.

CORRESPONDENCE

Letters were sent alerting freight haulers, major retailers dependent on trucked freight, wedding planners, venues, caterers, schools and school athletic programs, summer youth camps, fishing venues festival and event planners, tourism organizations, chambers of commerce, medical facilities, including regional military hospitals, and physicians' offices, and emergency services groups indicating that the closures were coming.

SIGNAGE/HIGHWAY ADVISORY RADIO

An extensive signage plan was developed that included permanent and portable variable message signs, highway advisory radio transmitters and standard class "A" construction signing.

TRADE/TRAVEL TRADES

Early in March 2005, WSDOT notified RV trade publications and other special interest travel publications of the bridge closures, even though the specific closure dates were not yet known. The goal was to inform leisure travelers of the closures and to direct those travelers to the project website for schedule updates. As soon as the dates were confirmed, a media announcement was distributed to local and regional news media, tourism and outdoors writers and programs, and tourism-based newsletters to generate media coverage. The notice alerted the public of the closure dates and provided a map highlighting alternative travel options.

During and After the Closures

WSDOT's goal during the closure was to provide drivers with information about alternative driving routes and construction progress at the bridge. WSDOT communication staff members aggressively pitched local news assignment desks and news editors for coverage and were available for media interviews at the job site. In addition, drivers were provided closure and construction information via the Internet; toll-free telephone hotline; roadway signage; highway advisory radio; and partnerships with regional public and private organizations. By "telling the story," WSDOT communication staff members built public confidence and agency credibility. They also mitigated possible negative messages that could have arisen during the closures.

When the bridge opened early, drivers knew. The public was quickly notified through regional media broadcasts; the Internet; toll-free telephone hotline; roadway signage; highway advisory radio; and, regional public and private organizations. It was evident the communication channels utilized during and after the closures were effective in providing drivers with timely information.

Communication Channels

MEDIA RELATIONS

WSDOT communication staff aggressively pitched local assignment desks and news editors for coverage during the two closure sessions. Communication staff was available for media interviews at the job site throughout each day of each closure and distributed daily news releases to regional media describing the work progress. Escorted by WSDOT staff, media had ready access to the bridge areas that were not in conflict with the critical K-G activities.

The project communication team moved very quickly to notify the public following each bridge opening. In addition to updating the project "viewing area" on-line, staff immediately distributed a time-lapse video showing the rollover to regional broadcast media and aggressively pitched news desks, supported by a media advisory, that the bridge was open and functioning.

INTERNET

Bridge information was updated in real-time on the project's web site. The on-line "viewing platform" had the latest bridge photos, as well as descriptions of the work progress and updates to the work schedule. The closure "survival guide" included detour route maps, a pre-travel checklist and information about the work at the bridge.

The WSDOT Statewide Traveler Information web page featured a Hood Canal Bridge closure graphic that linked visitors directly to the project web page for the duration of the closures.

CUSTOMER SERVICE

Closure information was accessible by calling the Hood Canal Bridge 24-hour telephone hotline number, 511, or WSF customer service representatives. WSF staff also announced the closures during the Olympic Peninsula-bound ferry runs.

When the bridge was open, the phone message was changed to reflect the bridge openings. Staff deactivated the 511 closure notice. WSF operations staff was notified and began notifying their riders about the bridge openings and the change to their adjusted ferry schedules.

SIGNAGE/HIGHWAY ADVISORY RADIO

Fifteen permanent and portable variable message signs were activated, including locations such as at Discovery Bay, northbound State Route 3 at Sherman Hill, northbound State Route 305 at Poulsbo and on State Route 16 at the Tacoma Narrows Bridge. Closed panels were placed on the 19 static bridge closure advisory signs.

Highway Advisory Radio (HAR) transmitters were operational during the closures at State Route-104 by the Hood Canal Bridge, Kingston, and along US 101 at the State Route 20 intersection. Messages were also recorded on the Interstate 5 corridor HAR's advising motorists of the closure and to adjust their routes accordingly.

Once the bridge was open, the "closed" panels were removed from the 19 static bridge closure advisory signs and the 15 permanent and portable variable message signs were deactivated. The static bridge closure advisory signs were removed within 10 days. Highway advisory radio transmitters were deactivated.

PARTNERSHIPS

The Olympic Peninsula Joint Marketing Association – an affiliation of Olympic Peninsula tourism and travel promotion organizations – provided tabloids to visitors in the Kitsap, Clallam, Jefferson and Mason county areas.

Port Gamble Visitor Center and Olympic Gateway Visitor Center offered extended hours to assist Olympic Peninsula visitors in finding detour information, local lodging information and telephone contact for travelers that did not realize the bridge was closed.

Community partners and residents were notified utilizing WSDOT Hood Canal Bridge e-mail listserv as soon as the bridge opened. Freight associations were notified by e-mail in order to reroute trucks. WSP was notified and assisted in traffic control at both ends of the bridge. Local military facilities were notified for shipments rerouting and marine openings.

Measurement: How did we do?

These closures were a test case for how WSDOT and its contractor might handle the planned eight-week bridge closure in 2009. First-hand information was collected regarding the effectiveness of various communication mechanisms including reports from Olympic Peninsula business, chambers and visitor centers, traffic counts, calls to Hood Canal Bridge information line, ferry ridership, visits to project website and media coverage.

Through the data collection process, WSDOT found that the strategy to utilize existing communication networks to distribute information was very effective in meeting project goals. The community responded well to the tools and tactics utilized by WSDOT and were well informed about the closures before and during them. This is substantiated by the increase in web site visits, constituent contacts and media coverage once the outreach campaign began.

First-hand Information

GOALS ACCOMPLISHED

- The public relations strategy to utilize existing communication networks to distribute information (plug into what already exists for a “grass roots” style campaign) was effective.
- A targeted and specific outreach plan increased the efficiency of the outreach efforts. The traveling public was well prepared for the two closures.
- There was minimal disruption for travelers unaware of the closures as a result of outreach efforts during the closures.
- Peninsula business owners and residents were well prepared and understood the need and benefit of the closures.
- The public’s confidence in WSDOT was strengthened.

MEDIA RELATIONS

Hood Canal Bridge closure information appeared approximately 400 times on four local TV stations and KIRO and KOMO radio. WSDOT’s key messages were carried throughout the extensive media coverage. The coverage drove listeners directly to the project website.

CONSTITUENT CORRESPONDENCE

The public contacted WSDOT staff by phone calls, e-mail or letters 7600 times before and during the closures. Residents knew about the closures and were looking for additional information. The majority of people who didn’t know about the closure were tourists.

A key observation was the number of times callers asked, “Where is the Hood Canal Bridge?”

The bridge is not listed on the Washington State official state highway map or on highway signs.

Comments and questions before the closures covered closure dates, bus schedules, boat launch availability, detour routes, ferry service during the closures, impact to marine traffic, opening times after approach span replacements, eight-week closures, biking across the bridge, traffic delays and lane closures, marine openings and pontoon site selection.

WSDOT received extensive positive feedback from the public during and after closures. Changeable messages signs that were switched early, before the first closure was finished, prompted a few negative comments.

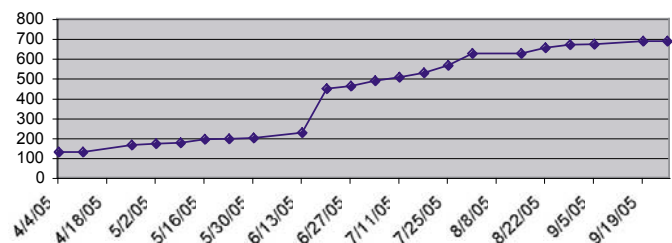
TABLOID FEEDBACK FORM

These tabloids were a comprehensive information piece about the Hood Canal Bridge project and the closures. People who came by the bridge during the closures and needed an alternate route map found the tabloid to be very helpful. Out of the 50,000 tabloids distributed, 13 responses were received through the feedback mechanism (Note: While the tabloid included a response form, it was not necessarily designed as a direct-response marketing tool, which may account for the .03 percent rate of return). All thought the information was very helpful. Suggestions included giving information on why not recommending people use SR 106 as detour route and offering ferry service from Seattle to Port Angeles.

E-MAIL LISTSERV

Visitors to the Hood Canal Bridge project web site were able to sign up to receive the latest news regarding the project right to their e-mail inboxes by being added to the Hood Canal Bridge listserv. Membership dramatically increased due to the April 2005 outreach efforts and then continued to increase slowly as the closures approached. There were 128 subscribers in the beginning of April and 687 by the end of August.

Hood Canal Bridge Listserv Members



INTERNET

The number of page views per month to www.hoodcanalbridge.com increased from 2,316 in May 2005 to 32,401 in August 2005. As the outreach efforts increased in intensity and the closures grew closer, the page views to the project web site drastically increased.

From two days before the first closure until two days after, August 9-15, the website received 10,884 page views with the highest day being 1,820 page views on August 12.

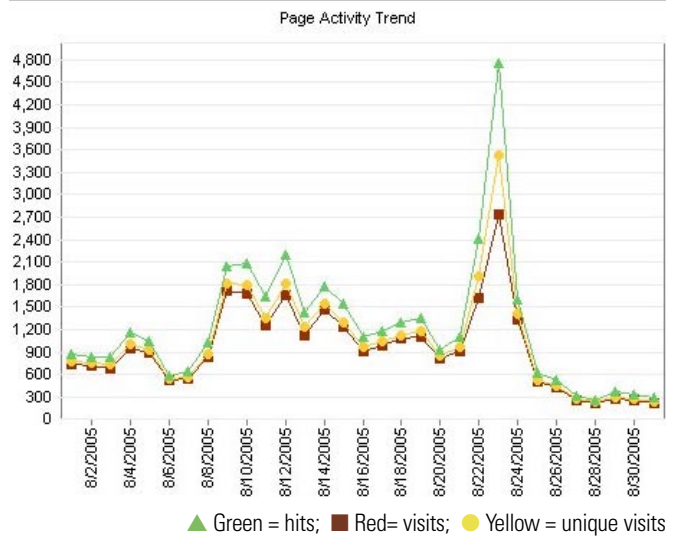
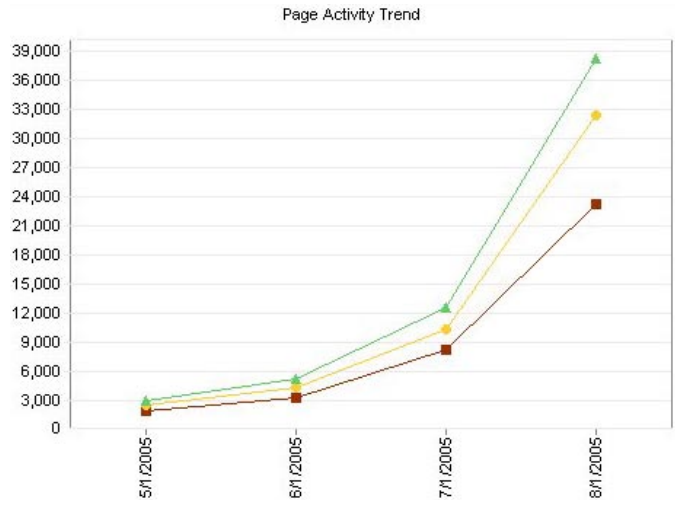
From two days before the second closure until two days after, August 19-25, the website received 10,410 page views with the highest day being 3,531 page views on August 23.

The extensive media coverage from the first closure familiarized the public with the project web site as an up-to-date and extensive source of information. With that knowledge, more people used the site to find out if when the bridge was going to open.

Sent: Friday, August 26, 2005 7:54 PM
To: Hixson, Becky
Subject: Awesome job informing the public...

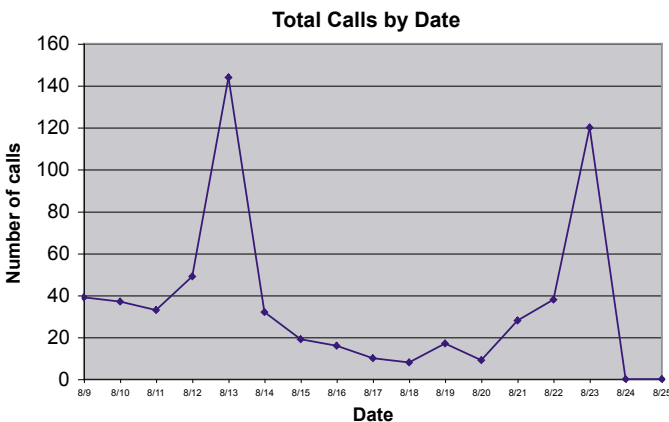
Thank you for the great website covering the Hood Canal Bridge closing and thank you for the great work getting it done on time. Your website is very, very helpful.

Clarice Arakawa
Port Angeles Washington Resident



24-HOUR INFORMATION LINE (1-877-595-HCB2)

The 24-hour toll-free hotline received almost 7,000 calls between June 25 and August 25. Between August 9-25, 3,958 calls were placed and 15 percent (600 people) pressed 0 to speak to an operator. Of that 600, 200 asked about bridge opening time once early opening information went out to the public, more than 100



needed driving directions, almost 100 questions regarded ferries and only 13 reported heavy traffic problems.

The number of calls peaked around each early opening, with the most calls coming right before the first opening.

The number of calls after the first opening tapered off more gradually than after the second opening. The feedback received through the call center assisted the WSDOT communications staff in knowing exactly what messages the public was receiving concerning the bridge. WSDOT staff was more familiar with the information that callers needed and quickly met their needs by providing a succinct phone message.

The information line also proved the effectiveness of highway signing. After the travel advisory signs were installed, the volume of calls increased dramatically. Drivers liked being able to find out about traffic while en route to their destination.

COMMUNITY FEEDBACK

Prior to the closures, WSDOT staff spent time working with community groups establishing mutually beneficial partnerships that would help spread the word about the closures and help groups better serve their clients. Important information regarding driver awareness of the closures came through these community partners.

Port Gamble Visitor Center had 239 visitors during the time of the closures (148 first closure and 91 second closure). Out of the 239, 105 or 44 percent (46 first closure and 59 second closure) did not know about the Hood Canal Bridge Closure. These travelers were grateful for hospitality provided and took the detour in stride. Source: Grant Griffin, President, Kitsap County Visitor & Convention Bureau.

The South Hood Canal area, including Hoodsport, was busier than usual during the closures. Quite a few people stopped to shop. Drivers were courteous and did not seem upset at having to drive a different route. Source: Cindy Sund, President, South Hood Canal Business Association

Jefferson County Fair attendance was equal to last year. Opening the bridge on Saturday night instead of Monday morning increased fair participant numbers. Fair attendees were well informed. Only two vendors declined to participate because the bridge was closed. Source: Sue McIntire, Treasurer, Jefferson County Fair

Olympic Peninsula Gateway Visitor Center, Shine had practically no visitors during the closures. Source: Jutta Gebauer, Olympia Peninsula Gateway Visitor Center.

Visitors to the Port Angeles Chamber of Commerce were grateful for hospitality provided and took the detour in stride. The only negative comments centered on the construction work and resulting detour on State Route 106. Source: Port Angeles Chamber of Commerce.

In August of 2005, Port Angeles, Port Townsend, Sequim, Clallam County and Jefferson County experienced a combined increase in room tax revenue of \$13,749 over the same month in 2004. While Jefferson and Clallam Counties were down slightly, Sequim and Port Townsend experienced significantly higher revenue. Source: Washington State Department of Revenue. This suggests that the public outreach and media efforts were successful in letting people know the peninsula was still open to business during the closures.

TRAFFIC PATTERNS

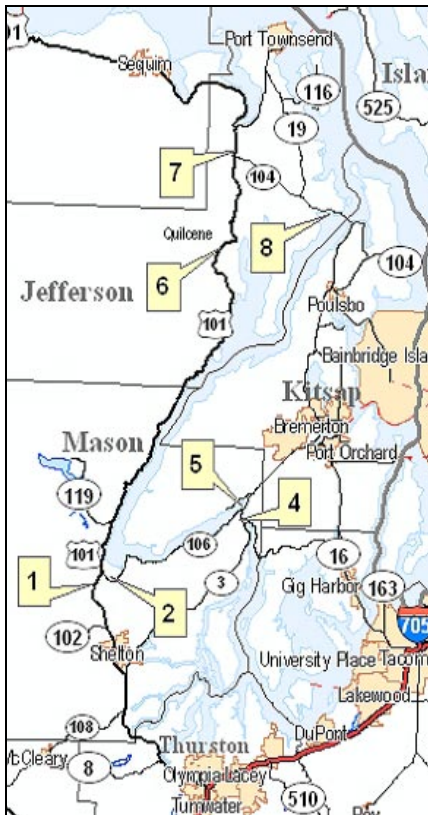
During the August closures, 15,000 to 20,000 average daily trips across the Hood Canal Bridge had to find a different route or did not cross the canal. The typical alternate route – driving around the canal using US 101 and SR 3 – is long and the roads are not built to handle significant traffic volumes.

WSDOT traffic engineers forecast traffic patterns during the closures and created a traffic control plan that identified potential heavy traffic use areas and provided traffic control at those points. Port Orchard Maintenance crews monitored SR 3, SR 104, SR 106 and US 101 throughout the closures.

WSDOT staff observations show drivers were aware of the closures and were prepared.

- Vehicle traffic decreased to a trickle approaching the Hood Canal Bridge about 15 minutes prior to each closure.
- Two collisions occurred on US 101 during the first closure but neither was attributed to the bridge closures.
- There was heavier traffic than usual but traffic moved smoothly on the alternate route, US 101/SR 3/SR 106.
- There was more traffic on the alternate route, US 101/SR 3/SR106, on the Monday morning of the weekday closure than on Tuesday morning.
- Traffic control from Washington State Patrol was needed on SR 104 at the east end of the Hood Canal Bridge before both of the early openings.
- WSP aerial and ground patrols, in coordination with the local county sheriffs, was effective in managing speeding in the northern Hood Canal area along US 101, especially in the Brinnon and Quilcene areas.
- On the Sunday afternoon and evening prior to the second closure, traffic on the bridge was very heavy due to people traveling east, off the Peninsula.

This qualitative data was substantiated by the results from the analysis of the eight traffic counters placed along the alternate route, US 101/SR 3/SR 106.



TRAFFIC DATA

Seven traffic counters were used around the northeast Olympic Peninsula to help determine quantitative traffic patterns and behaviors during the closures. The counters were in place for five weeks from Wednesday, July 27 until Wednesday, Aug. 31. Leaving the counters in place for this period of time allowed for evaluation of traffic patterns before, during and after the two closures.

The counters' locations were:

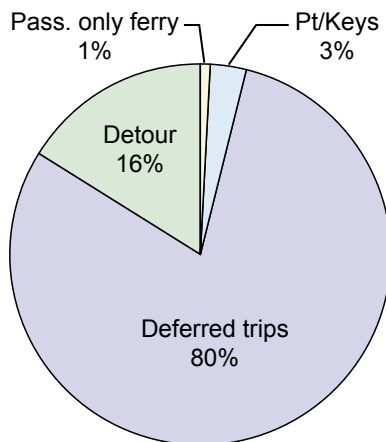
- 1: US 101 immediately south of SR 106 intersection
- 2: SR 106 immediately south of US 101 intersection
- 3: Not used
- 4: SR 3 immediately south of SR 106 intersection
- 5: SR 3 immediately north of SR 106 intersection
- 6: US 101 about one mile south of Quilcene
- 7: US 101 immediately north of the SR 104 intersection
- 8: SR 104 immediately west of the Hood Canal Bridge

Data about vehicle and passenger ferry boardings was also gathered. In particular, a detailed record of boarding data for the WSF Port Townsend/Keystone route was used to establish and analyze the impact of additional vehicles. Data from the closure dates, as well as comparable dates in 2004, was used to provide a basis of comparison.

AUGUST 2005 CLOSURE ANALYSIS

Traffic counter results showed that about 4/5 of the normal Hood Canal Bridge (or bridge-related) trips did not take place at all during the closure (see chart at left). The data suggested that US 101 was the primary choice of detour route for the bridge-related trips that did take place. The intersections of US 101 and SR 106, and SR 106 and SR 3, were specifically monitored to measure closure impacts. The results show that average traffic volumes changed for the affected routes as follows:

Choices for bridge-related traffic during the August 2005 closures

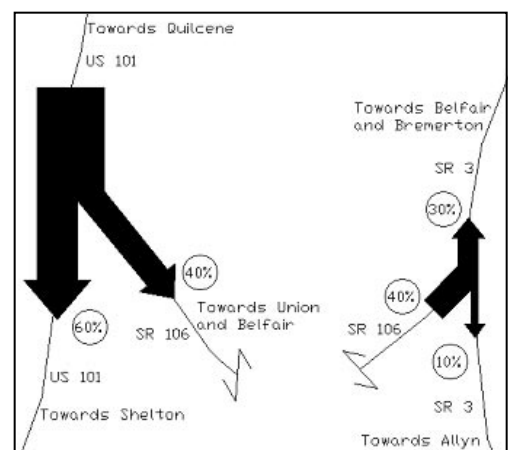


	Average Daily Traffic	HCB Related	Total during Aug. closure	Increase over normal
US 101 north of SR 106	5,490	3,160	8,650	60%
US 101 south of SR 106	2,210	1,690	3,900	75%
SR 106 east of US 101	9,590	2,620	12,210	25%
SR 3 north of SR 106	17,820	3,040	20,860	15%
SR 3 south of SR 106	12,670	740	13,410	5%

Please note: weekday and weekend information is combined in this chart

The split in bridge-related portion of the detour traffic stream was also analyzed. Bridge-related traffic at the intersection of US 101 and SR 106 showed about 60 percent favoring US 101 towards Shelton, while the remaining 40 percent used SR 106 towards Belfair. Of this 40 percent using SR 106, three times as many turned north towards Bremerton, than south towards Allyn (see diagram at right).

Distribution of bridge-related, US 101 detour traffic

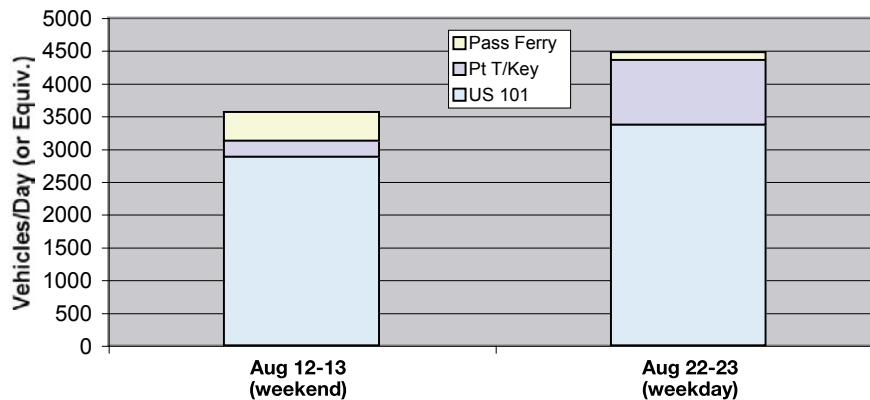


Ferries

Ferries were another transportation option for Olympic Peninsula residents and visitors during the August Hood Canal Bridge closures. Both public and private ferries offered additional runs and routes.

Ferry alternatives arriving and departing Port Townsend and Port Ludlow in East Jefferson County did not play as large a role as the US 101 detour. An overall increase in boardings, ranging from 30 to 40 percent over normal traffic, was recorded on the WSF Port Townsend/Keystone route during the closures. A special passenger-only ferry, providing service between Port Townsend and Seattle, saw average boardings during the first closure approaching 70 percent of capacity. Another special passenger-only ferry, serving Port Ludlow and Kingston during the second closure, had far fewer boardings, with average sailings serving only about 15 percent of capacity.

August Closures Detour/Ferries Summary



WASHINGTON STATE FERRIES

Washington State Ferries (WSF) added service to the Port Townsend/Keystone route on Aug. 12-13 and Aug. 22-23. Service began at 4:45 a.m. from Port Townsend and lasted until 12:30 a.m. from Keystone. Routes returned to normal after the bridge opened.

The ferry system also placed a second large vessel on the Seattle/Bremerton route, moving the M/V Spokane from Edmonds and replacing it with a smaller 130-car Issaquah-class ferry. Seattle/Bremerton helped Olympic Peninsula-bound travelers shortcut through Belfair to SR106, which meets US 101 near Union. SR 106 was under construction so WSDOT recommended drivers use SR 3 through Shelton to US 101.

The chart below shows a comparison between the ridership on ferry routes in 2004, without a bridge closure, and 2005, during the days of the closures. Overall ferry ridership was down 11 percent during the first (weekend) closure and 5 percent during the second (weekday) closure, but ridership on alternate routes was heavy. At peak drive times during each closure, riders waited up to three hours to at Port Townsend and more than an hour at Bremerton. From the traffic shift, it is evident drivers knew what ferry options were available due from outreach materials distributed by WSDOT and WSF.

Shift in Vehicle Traffic During August 2005 Hood Canal Bridge Closures

Ferry Route	Aug 12-13, '05 (weekend)	Aug 13-14, '04 (weekend)	Change	
Seattle-Bremerton	5,229	4,645	584	13%
Seattle-Bainbridge	11,268	13,840	-2,572	-19%
Edmonds-Kingston	10,010	16,183	-6,173	-38%
Mukilteo-Clinton	15,339	14,875	464	3%
Port Townsend-Keystone	4,801	3,699	1,102	30%
Fauntleroy-Southworth	3,661	3,557	104	3%
TOTALS	50,308	56,799	-6,491	-11%

Ferry Route	Aug 22-23, '05 (weekday)	Aug 22-23, '04 (weekday)	Change	
Seattle-Bremerton	4,416	4,053	363	9%
Seattle-Bainbridge	10,918	12,731	-1,813	-14%
Edmonds-Kingston	9,096	12,997	-3,901	-30%
Mukilteo-Clinton	14,633	13,056	1,577	12%
Port Townsend-Keystone	3,703	2,655	1,048	39%
Fauntleroy-Southworth	3,652	3,376	276	9%
TOTALS	46,418	48,868	-2,450	-5%

PORT TOWNSEND/SEATTLE PASSENGER-ONLY FERRY

Port Townsend Chamber of Commerce sponsored a passenger-only ferry between Port Townsend and Seattle during the first closure. In Seattle, boats departed from and arrived at Argosy Cruises, Pier 55, next to Washington State Ferries Coleman Dock. In Port Townsend, boats departed and arrived at the NW Maritime Center Dock.

Ticket prices of \$15 round trip or \$7.50 one-way included a Jefferson Transit weekend pass. Tickets were non-refundable and purchased on-line, in person or by phone. The capacity of the boat was 292 but only 250 tickets were sold in advance.

The total ridership from Port Townsend/Seattle was 894 and 912 from Seattle/Port Townsend. There were an average of 200 passengers per run. Ridership was 69 percent of capacity.

Port Townsend to Seattle Passenger-only Ferry

Date	Route	Time	Capacity	Ridership	
Aug 12, Fri.	Sea./PT	7:30 p.m.	292	100	34%
Aug 13, Sat.	PT/Sea	9:30 a.m.	292	260	89%
Aug 13	Sea./PT	11:30 a.m.	292	230	79%
Aug 13	PT/Sea	4:30 p.m.	292	220	75%
Aug 13	Sea./PT	6:30 p.m.	292	222	76%
Aug 14, Sun.	PT/Sea	10:30 a.m.	292	241	83%
Aug 14	Sea./PT	12:30 p.m.	292	145	50%
Aug 14	PT/Sea	4:30 p.m.	292	173	59%
Aug 14	Sea./PT	6:30 p.m.	292	215	74%
TOTALS			2684	1806	69%

PORT LUDLOW/KINGSTON PASSENGER-ONLY FERRY

The Port Ludlow Chamber of Commerce, in cooperation with Jefferson Transit, Kitsap Transit, the Port of Kingston, Port Ludlow Associates, and the Inn at Port Ludlow provided a free 149 passenger-only ferry service between Port Ludlow and Kingston during the second closure. The ferry service was on a first-come first-serve basis, and operated three round trips each day. The Port Ludlow Marina and the Port of Kingston Marina were used for arrivals and departures. The schedule coincided with Kingston-Seattle "Aqua Express," and the Kitsap Transit Schedule.

The total ridership from Port Ludlow/Kingston during the second closure was 388. The ferry held an average of 21 passengers per run. The total ridership was 14 percent of capacity.

Port Ludlow to Kingston Passenger-only Ferry

Date	Route	Time	Capacity	Ridership	
Aug 22, Mon.	K/PL	4:30 a.m.	149	6	4%
Aug 22	PL/K	5:45 a.m.	149	17	11%
Aug 22	K/PL	8:00 a.m.	149	39	26%
Aug 22	PL/K	9:15 a.m.	149	25	17%
Aug 22	K/PL	4:40 p.m.	149	44	30%
Aug 22	PL/K	5:55 p.m.	149	30	20%
Aug 23, Tue.	K/PL	4:30 a.m.	149	4	3%
Aug 23	PL/K	5:45 a.m.	149	39	26%
Aug 23	K/PL	8:00 a.m.	149	31	21%
Aug 23	PL/K	9:15 a.m.	149	28	19%
Aug 23	K/PL	4:40 p.m.	149	42	28%
Aug 23	PL/K	5:55 p.m.	149	31	21%
Aug 24, Wed.	K/PL	4:30 a.m.	149	0	0%
Aug 24	PL/K	5:45 a.m.	149	8	5%
Aug 24	K/PL	8:00 a.m.	149	8	5%
Aug 24	PL/K	9:15 a.m.	149	9	6%
Aug 24	K/PL	4:40 p.m.	149	23	15%
Aug 24	PL/K	5:55 p.m.	149	4	3%
TOTALS			2682	388	14%

FORECAST COMPARISONS

A forecasting procedure developed in 2002 for predicting traffic patterns during bridge closures was revised based on recent information, including data gathered during the August 2005 closures. On average, a comparison between traffic patterns observed during the August 2005 closure and traffic predictions results showed:

- Differences between actual and predicted closure traffic volumes and deferred trips are consistent with expectations for a short-term closure.
- Lower traffic volumes, and higher deferral rates, reflect an ability to reschedule or forgo travel more easily over the short time frame.
- Hourly records confirmed that travelers who normally use the bridge left earlier in the day and returned later to accommodate the longer drive time required to reach their destination.

Details on traffic patterns can be found in Appendix A, the SR 104 Hood Canal Bridge August 2005 Closure Analysis/Mitigation Travel Demand Update.

Lessons Learned

WSDOT staff learned some valuable lessons by reviewing the first-hand information collected during the August Hood Canal Bridge closures. These lessons in the areas of community outreach, constituent correspondence, the project website, traffic control, media relations, operations, mitigation planning, and ferry service provide WSDOT with a solid stage from which to start the eight-week closure planning process.

The application of these lessons must be tempered by the reality that closing the Hood Canal Bridge for eight weeks will have a much bigger effect on the community than closing the bridge twice for 50 hours each time. Duration of the closure, traffic patterns, impact on local businesses and mitigation planning efforts will all be different. Therefore, the WSDOT team has carefully examined each lesson learned during the August 2005 closures before including them in the recommendations for the eight-week closure planning efforts.

Community Outreach

- Planning and prior notification efforts paved the way for smooth closure operations.
- Community partnerships with the local businesses, chambers and visitor centers were key to the success of the closures and for gathering important information about how the closures affected the community.
- Information about the early openings spread very quickly through the pre-closure information channels that had been established.
- Sending notification of construction progress via e-mail to our community partners and call center in addition to the news media was an effective way keep our partners updated.
- There was a need for basic bridge closure information to be available in other languages.
- The most effective outreach materials were the maps provided on the ferries, the direct-mail postcard and the newspaper insert tabloids.
- WSDOT should provide a better description of the bridge's location. Locals know where the bridge is but people from other areas did not realize the closure affected their driving route. A more specific phrase, such as "the Hood Canal Bridge is the only northern access to the Olympic Peninsula," would help.
- Drivers need a system that provides real-time traffic reports near the bridge and on alternate routes.
- The detour maps need to include the distance of the detours and more detailed ferry information.

Media Relations

- The time-lapse video was used extensively by TV stations and should be utilized again in a manner fitting to the extended closure time.
- More public relations staff was needed on-site throughout the closures due to extensive media coverage.
- WSDOT should expand protocols for opening earlier or later than planned.
- A detailed news notification schedule and press release template should be created prior to the closures.
- WSDOT needs to focus media on the bridge and northern Hood Canal. South Hood Canal did not experience traffic slowdowns, yet the media reports may have discouraged people from traveling that way.

Constituent correspondence to WSDOT

- Posting on-line answers to questions coming through e-mail helped create very comprehensive and informative August closure web pages.
- The 24-hour answering service for 1-877-595-4222 (HCB2) was essential for communications with the drivers about the closures and the early openings.
- Many callers were surprised and pleased to have a person instead of a recording available to answer questions.
- After the travel advisory signs were installed, the volume of calls increased dramatically on Thursdays and Fridays.
- The message on 1-877-595-4222 (HCB2) should include a WSF customer service number and have the option to hear the message more than once.

*Sent: Monday, August 22, 2005 9:05 PM
Subject: Commission Feedback
To: Washington State Transportation Commission*

Absolutely outstanding job on the Hood Canal Project. Everyone involved on this one needs a "hats off" for a job well done. The information provided by WSDOT was a tremendous help. The engineers, construction workers and project managers have done a GREAT Job.

*Greg Butler
gregb67677@aol.com*

Internet

- The increased web usage before the closures indicated many people used the on-line information to plan ahead.
- The media publicized the web site extensively during the first closure. This helped drive more Internet traffic to www.hoodcanalbridge.com.
- An easy-to-remember url was essential for guiding people to the web site. A third of the visitors to www.hoodcanalbridge.com during the closures came to the site directly by entering the url.
- Web banners on the WSDOT traffic pages were also very important in driving Internet traffic to the project web site. Eighteen percent clicked through to the project web site from one of the Hood Canal Bridge closure icons posted on the WSDOT traffic pages.
- Daily updates of the real-time progress schedule were an effective way to alert people about the early openings.

WSDOT Operations/Mitigation Planning

- Postponing construction and maintenance work on roads near the bridge contributed to smoothly flowing traffic on the alternate driving routes. Intra-agency communication should continue to coordinate project schedules surrounding the eight-week closure.
- Working with WSDOT maintenance crews in Tacoma was essential for placing "closed" plaques on the advisory signs.
- The Traffic Management Center was instrumental in alerting operations staff to changes in the original mitigation plan.
- The highway advisory radio transmissions needed to cover a larger area.
- More staff was needed to manage signing over the large geographic area impacted by the bridge closure. Inspection duties should be split so that one WSDOT inspector covers the east side of the bridge and one on the west side.
- The contract provisions should include language pertaining to sign removal.
- Lights should be flashing on the "bridge closed" signs at both ends of the bridge.
- The signage plan should include exact locations of the changeable message signs and sign disposition instructions.
- Extra changeable message signs should be available to replace any that are damaged.
- WSDOT should provide closure dates on advisory sign.

Ferries

- Coordination with WSF in the pre-closure outreach efforts and the post-closure operations efforts was essential to providing accurate travel options to drivers. WSF offered closure information on their web site, ticket booths, signage near the ferry terminals, posters and fliers on board the ferries, e-mail newsletter, in their quarterly newsletter and by handing out information to ferry riders.
- A shift in vehicle traffic during the closures resulting in increases on some ferry routes but a decrease in overall ferry ridership.
- There was a smaller decrease in overall ferry ridership during the second closure than the first. The reasons for this could be the shorter wait times (ferries were much busier during the first closure than the second) or the need to get to work necessitated taking a trip instead of deferring it.
- The Port Townsend/Keystone ferry route absorbed the greatest increase in traffic detouring around the bridge. An increase of about 600 vehicles per day was recorded on this route on each of the closure days, comprising an average of 3% of the total bridge-related vehicle demand during the two closures.
- Ferry ridership shifted north (riders who normally took the Edmonds/Kingston ferry opted for Port Townsend/Keystone) and south (those who normally took the Seattle/Bainbridge ferry opted for Seattle/Bremerton and Fauntleroy-Southworth) of the bridge.
- Even though Port Ludlow/Kingston ferry was free during the second closure, ridership was low.
- The Port Townsend/Seattle passenger-only ferry was successful during the first closure. Demand for the Seattle service was consistent with the forecast hourly volume distribution, and was well distributed through the day.
- Adding early morning and late evening sailings on Port Townsend/Keystone route is unlikely to substantially reduce congestion on US 101. Although a longer closure would certainly encourage more use then, expect that these sailings will mainly serve as overload capacity.
- Vehicle capacity intended to serve peak bridge-related demand on the Port Townsend/Keystone route is best concentrated in the afternoon and evening hours.
- To mitigate bridge closure, use passenger-only ferry routes that serve central locations to reduce uncertainty about the success of these routes.

Traffic Patterns

- Three times as many trips were deferred as predicted. This can be explained primarily by the short duration of the closure, since it's easier to reschedule a trip around a two-day closure than an eight-week closure.
- The August 2005 closure indicates a shift of traffic volumes towards the early morning and late evening hours, and away from mid-day hours. This effect is also expected to be true for detour options including ferries. The shift in travel time was observed for all days and in both directions of travel.
- Of the three detour options (US 101, Washington State Ferries (WSF) Port Townsend/Keystone route and Passenger-only ferry service (POF) between Port Townsend and Seattle) the US 101 option was found to attract considerably more trips than the other two combined.
- Bridge-related traffic represented a higher percentage of the weekday volume on US 101 since typical weekday traffic there is about 25 percent less than on weekends (4800 weekday vehicles per day vs. 6400 weekend vehicles per day).
- Traffic control for US 101, SR 106 and SR 3 was effective. No major backups or traffic snarls occurred during the closures. WSP was able to do periodic flagging as needed at SR 106/SR 3 to keep traffic moving. The designated traffic control times aligned with the actual peak traffic times.
- The traffic split at the US 101/SR 106 intersection during the August 2005 closure is projected to be the same for the eight-week closure – expect that bridge-related traffic traveling US 101 will split 60 percent US 101 (towards Shelton)/40 percent SR 106.
- The traffic split at the SR 106/SR 3 intersection during the August 2005 closure is projected to be the same for the eight-week closure – expect that bridge-related traffic traveling on SR 106 will split 75 percent SR 3 north/25 percent SR 3 south.

Forecast for 2009 Traffic Patterns

- The forecast procedure described in 2002 for predicting travel behavior during the bridge closure has been revised. The changes reflect knowledge gained over the past three years, the August 2005 closure experience, and the need to provide a more flexible format. These changes include:
 - The average daily traffic expected during closure has been reduced in response to recent declines in traffic growth.
 - The hourly distribution of traffic during closure has been revised in response to shifts in timing seen in the recent closure.
 - A range of values for traffic volumes and patterns has been created to better represent potential travel scenarios.
- A summary of projected 2009 traffic volumes is detailed in Appendix A, the SR 104 Hood Canal Bridge August 2005 Closure Analysis/Mitigation Travel Demand Update.

Recommendations

Recommendations have been provided regarding eight-week closure planning process based on the lessons learned from the August 2005 closure that may be applied directly to the eight-week closure planning efforts. Following these recommendations will assist WSDOT in meeting its eight-week closure mitigation and public outreach goals.

- Incorporate the ferry information gathered from the August 2005 closures into both private and public ferry service options being evaluated.
- Use the traffic patterns information gathered from the August 2005 closures to guide mitigation plan update.
- Work with the Olympic Peninsula community through the PRTPO on updating the eight-week closure mitigation plan as needed.
- Continue to cultivate community partnerships with the local businesses, chambers and visitor centers.
- Update the project's eight-week closure communication plan.
- Find ways to provide better real-time traffic reports near the bridge and on alternate routes for drivers.
- Create an updated signage plan.
- Set up a system to film east-half replacement process.
- Create extensive media relations plan, including distribution of time-lapse footage.
- Keep 1-877 number in place but resolve confusion between two Hood Canal Bridge information lines.
- Continue to promote www.hoodcanalbridge.com and grow listserv membership.
- Pursue improving the highway advisory radio system near the bridge.
- Postpone any other construction projects on the detour routes during the time of the closure.
- Start public notification process in January 2008.
- Use a range of forecast traffic volumes, like those available in the forecast revision described here, when determining the scale and type of mitigation activities to provide.
- Reduce forecast uncertainties by conducting periodic project awareness surveys.



For more information about the Hood Canal Bridge Project visit the project web site, **www.hoodcanalbridge.com**, or contact project staff:

Becky Hixson, *Communication Manager*, (253) 305-6450, hixsonb@wsdot.wa.gov

Eric Soderquist, *Project Director*, soderqe@wsdot.wa.gov

Appendix A

SR 104

Hood Canal Bridge

August 2005 Closure Analysis/ Mitigation Travel Demand Update

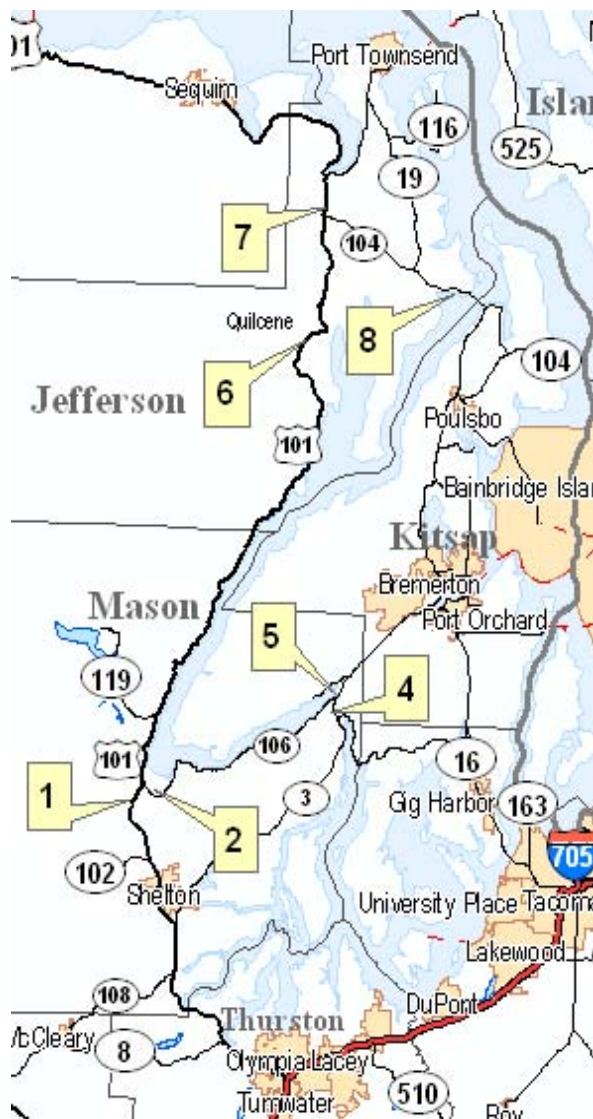


Executive Summary

This report describes an analysis of traffic impacts found during the two August 2005 closures of the Hood Canal Bridge. The report focuses on the impact at specific locations by comparing traffic volumes during the closure event to normal traffic loads, as well as to forecasted volumes. Revisions are described to the forecasting procedure established in 2002, and suggestions proposed for WSDOT response for the 2009 closure.

Traffic Data

Seven traffic counters were placed around the northeast Olympic Peninsula to help determine quantitative traffic patterns and behaviors during the closures. The counters were in place for five weeks from Wednesday, July 27 until Wednesday, August 31. Leaving the counters in place for this period of time allowed for evaluation of the traffic patterns before, during, and after the two closures.



Counter locations:

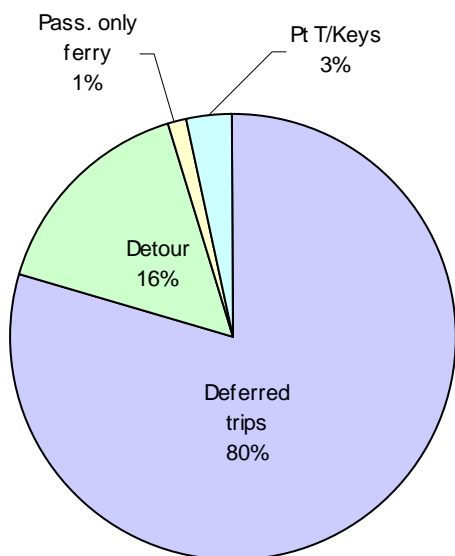
- 1: US 101 immediately south of SR 106 intersection
- 2: SR 106 immediately east of US 101 intersection
- 3: Not used
- 4: SR 3 immediately south of SR 106 intersection
- 5: SR 3 immediately north of SR 106 intersection
- 6: US 101 about one mile south of Quilcene
- 7: US 101 immediately north of the SR 104 intersection
- 8: SR 104 immediately west of the Hood Canal Bridge

Data about vehicle and passenger ferry boardings was also gathered. In particular, a detailed record of boarding data for the WSF Port Townsend/Keystone route was used to establish and analyze the impact of additional vehicles. Data from the closure dates, as well as comparable dates in 2004, was used to provide a basis of comparison.

Impacts

Traffic impacts during the closure were analyzed from several perspectives, with an emphasis on the description of specific impacts at certain locations. One analysis compared traffic volumes obtained during the closure event to normal traffic volumes. Another analysis compared closure volumes to a revised forecasting procedure.

Choices for bridge-related traffic during the August 2005 closures



The split in bridge-related portion of the detour traffic stream was also analyzed. Bridge-related traffic at the intersection of US 101 and SR 106 showed about 60% favoring US 101 towards Shelton, while the remaining 40% used SR 106 towards Belfair. Of this 40% using SR 106, three times as many turned north towards Bremerton, than south towards Allyn (see diagram at right).

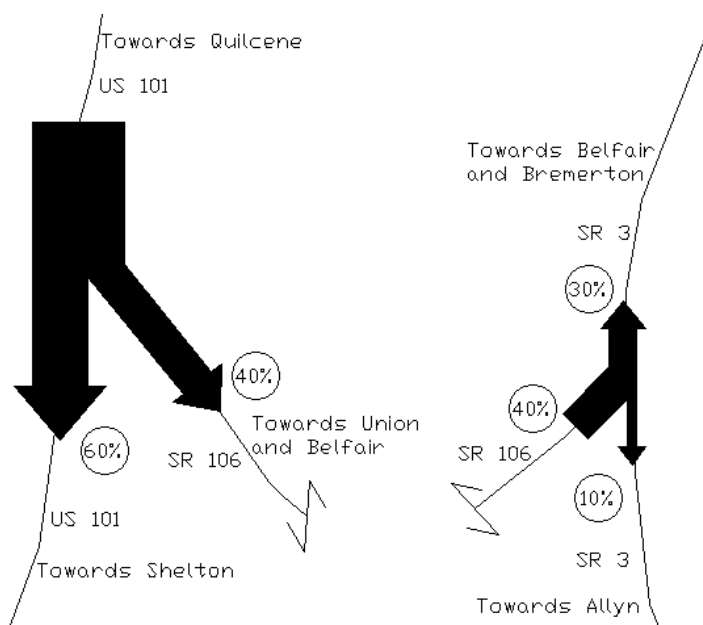
Ferry alternatives arriving and departing Port Townsend and Port Ludlow in East Jefferson County did not play as large a role as the US 101 detour. An overall increase in boardings, ranging from 30% and 40% over normal traffic, was recorded on the WSF Port Townsend/Keystone route during the closures.

August 2005 closure analysis

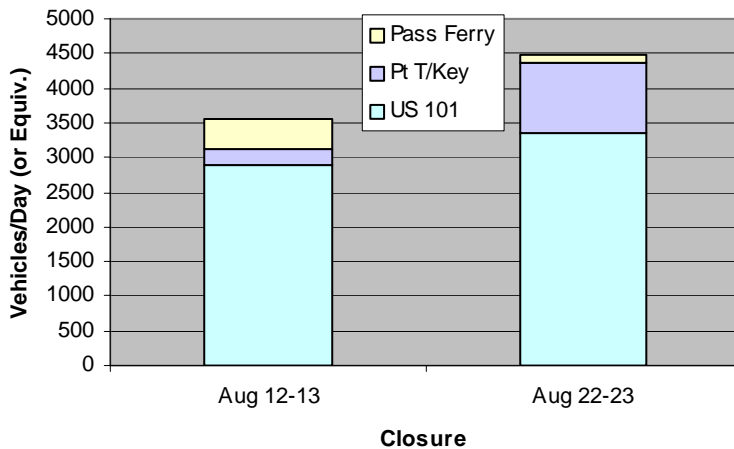
Traffic counter results showed that about 4/5 of the normal Hood Canal Bridge (or bridge-related) trips did not take place at all during the closure (see chart at left). The data suggested that US 101 was the primary choice of detour route for the bridge-related trips that did take place. The intersections of US 101 and SR 106, and SR 106 and SR 3, were specifically monitored to measure closure impacts. The results show that average traffic volume changed for the affected routes as follows:

US 101 north of SR 106 – 60% increase
US 101 south of SR 106 – 20% increase
SR 106 east of US 101 – 45% increase
SR 3 north of SR 106 – 15% increase
SR 3 south of SR 106 – 5% increase

Distribution of bridge-related, US 101 detour traffic



August Closures Detour/Ferries Summary



A special passenger-only ferry, providing service between Port Townsend and Seattle, saw average boardings during the first closure approaching 70% of capacity. Another special passenger-only ferry, serving Port Ludlow and Kingston during the second closure, had far fewer boardings, with average sailings serving only about 15% of capacity.

Forecast comparisons

A forecasting procedure developed in 2002 for predicting traffic patterns during bridge closures was revised based on recent information, including data gathered during the August 2005

closures. On average, a comparison between traffic patterns observed during the August 2005 closures, and predicted traffic results showed:

- Between 1/3 to 1/2 of predicted daily trips were detected on US 101.
- The Port Townsend/Seattle passenger ferry daily volumes matched or exceeded predictions.
- The Port Ludlow/Kingston passenger ferry daily volumes were 80% to 90% less than predictions.
- Between two and four times as many trips were deferred as predicted.
- Hourly traffic volumes were higher before 6 AM and after 6 PM, and were lower from 12-6 PM.

Differences between actual and predicted closure traffic volumes and deferred trips are consistent with expectations for a short-term closure. Lower traffic volumes, and higher deferral rates, reflect an ability to reschedule or forgo travel more easily over the short time frame. Hourly records confirm that travelers who normally use the bridge are leaving earlier in the day, and returning later in the day than usual. In this way, they seem to be taking the longer duration of the detour trip into account.

Forecast revisions

The forecast procedure described in 2002 for predicting travel behavior during the bridge closure has been revised. The changes reflect knowledge gained over the past three years, the August 2005 closure experience, and the need to provide a more flexible format. These changes include:

- The average daily traffic expected during closure has been reduced in response to recent declines in traffic growth.
- The hourly distribution of traffic during closure has been revised in response to shifts in timing seen in the recent closure.
- A range of values has been introduced for several of the forecast procedure inputs. The result is a range of predictive outputs that provide flexibility for mitigation planners. The input ranges

are based on a more flexible interpretation of bridge user surveys from 1998 and 2001. The revised inputs are related to the following survey elements:

- Frequency of the trip (trips per week per traveler)
- Proximity of the bridge to the trip's origin and destination
- The importance of a private automobile on the trip
- The ability to reschedule the trip until the bridge is reopened

Input ranges were selected to account for uncertainty in these elements not explained by the surveys. The trip alternatives (passenger-ferry connecting Shine and Port Gamble, vehicle detours, trips rescheduling) remain the same in the revised forecast. A summary of traffic volume results using the revised procedure is shown below:

May/June 2009 Closure Forecast Summary Bi-directional traffic during daytime (high volume) hours			
<i>Period</i>	<i>Shine/Pt Gamble Ferry (passengers/hour)</i>	<i>US 101 and WSF PT/Keystone (vehicles/hour)</i>	<i>Deferred Trips (vehicles/hour)</i>
Weekday	200 – 400	650 – 675*	150 – 325
Weekend	250 – 475	650 – 725**	200 - 400

* Estimated normal weekday daytime volume in May/June 2009 – 300 vph

** Estimated normal weekend daytime volume in May/June 2009 – 400 vph

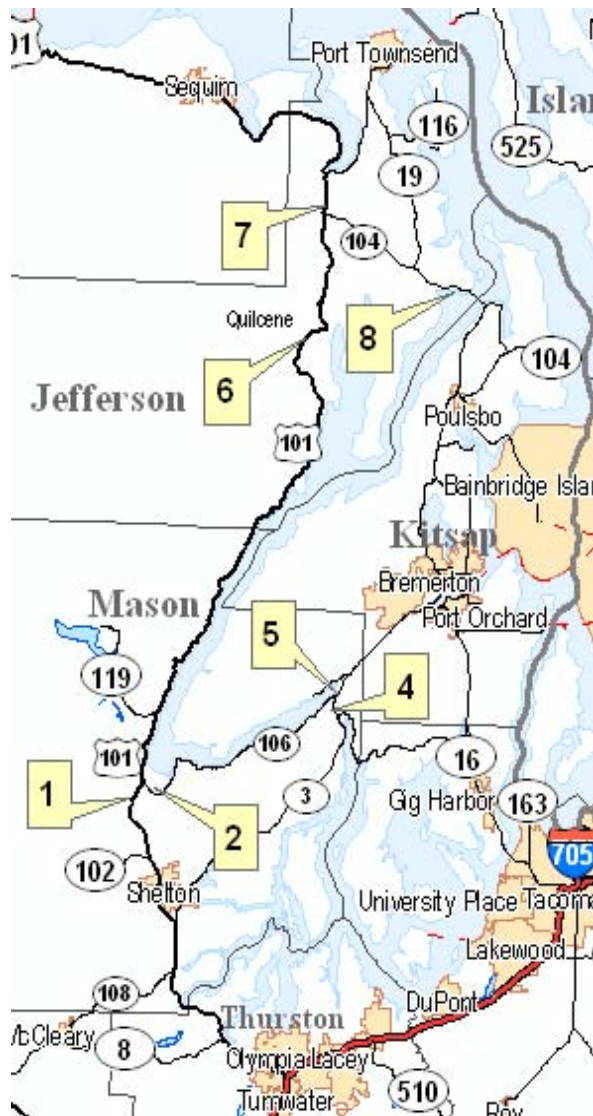
An Analysis of the 2005 Hood Canal Bridge Closures and an Updated 2009 Closure Forecast

The August 2005 Hood Canal Bridge Closures

Two planned closures during August 2005 provided the time necessary to install entirely new bridge approach spans. The closure was monitored for purposes of analyzing the effect of the closures on traveler behavior. The results show that most travelers were able to defer their trips to a day or time when the bridge was open. Detour routes involving US 101, and connecting to SR 106 and SR 3, handled most of the traffic involving those who did decide to travel during the closure, while ferry options were utilized to a lesser extent.

Traffic Data

Seven traffic counters were placed around the northeast Olympic Peninsula to help determine quantitative traffic patterns and behaviors during the closures. The counters were in place for five weeks from Wednesday, July 27 until Wednesday, August 31. Leaving the counters in place for this period of time allowed for evaluation of the traffic patterns before, during, and after the two closures.



Counter locations:

- 1: US 101 immediately south of SR 106 intersection
- 2: SR 106 immediately east of US 101 intersection
- 3: Not used
- 4: SR 3 immediately south of SR 106 intersection
- 5: SR 3 immediately north of SR 106 intersection
- 6: US 101 about one mile south of Quilcene
- 7: US 101 immediately north of the SR 104 intersection
- 8: SR 104 immediately west of the Hood Canal Bridge

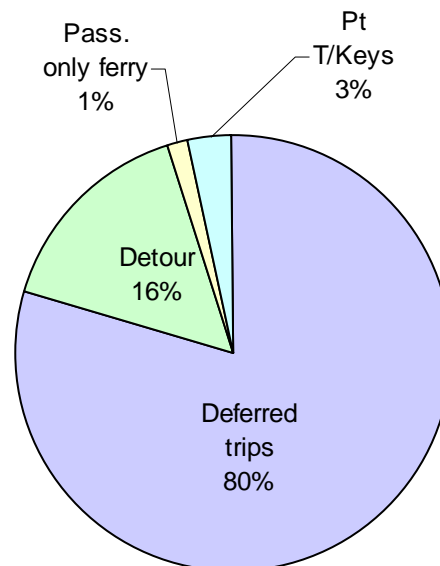
Data about vehicle and passenger ferry boardings was also gathered for purposes of analysis. In particular, a detailed record of boarding data for the WSF Port Townsend/ Keystone route was used to establish and analyze the impact of additional vehicles. Data from the closure dates, as well as comparable dates in 2004, was used to provide a basis of comparison.

August 2005 Closure Analysis - Summary

Three detour options were monitored as part of this study of the August 2005 bridge closure:

- US 101
- Washington State Ferries (WSF) Port Townsend/Keystone route
- Passenger-only ferry service (POF) between Port Townsend and Seattle

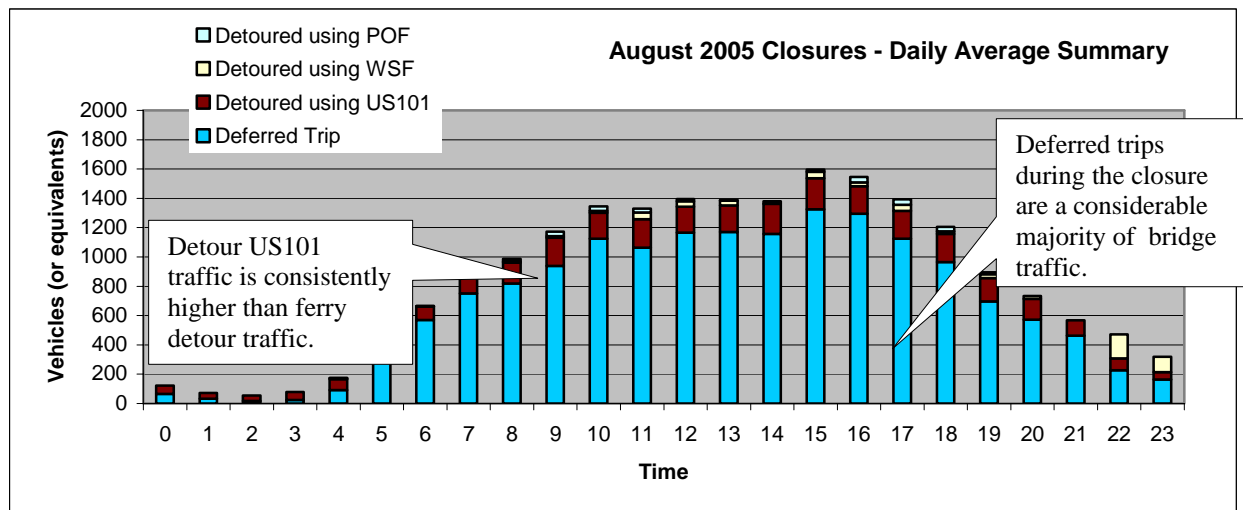
Of the three, the US 101 option was found to attract considerably more trips than the other two combined. But among the vast majority of those travelers who normally cross the Hood Canal Bridge (called bridge-related trips in this report), the overwhelming preference was to defer the trip, by replacing it with other options.



These options were not monitored, but are assumed to include such things as; not making the trip at all, substituting a local trip, or rescheduling the trip until a time when the bridge is open. This deferred category represented between 77 percent and 83 percent of all trips that would normally use the bridge.

Choices for bridge-related traffic during the August 2005 closures - summary

Of the 17 to 23 percent of normal bridge traffic that chose a detour option, between 13 and 19 percent used US 101. No more than 5 percent chose to use a ferry to reach their destination.



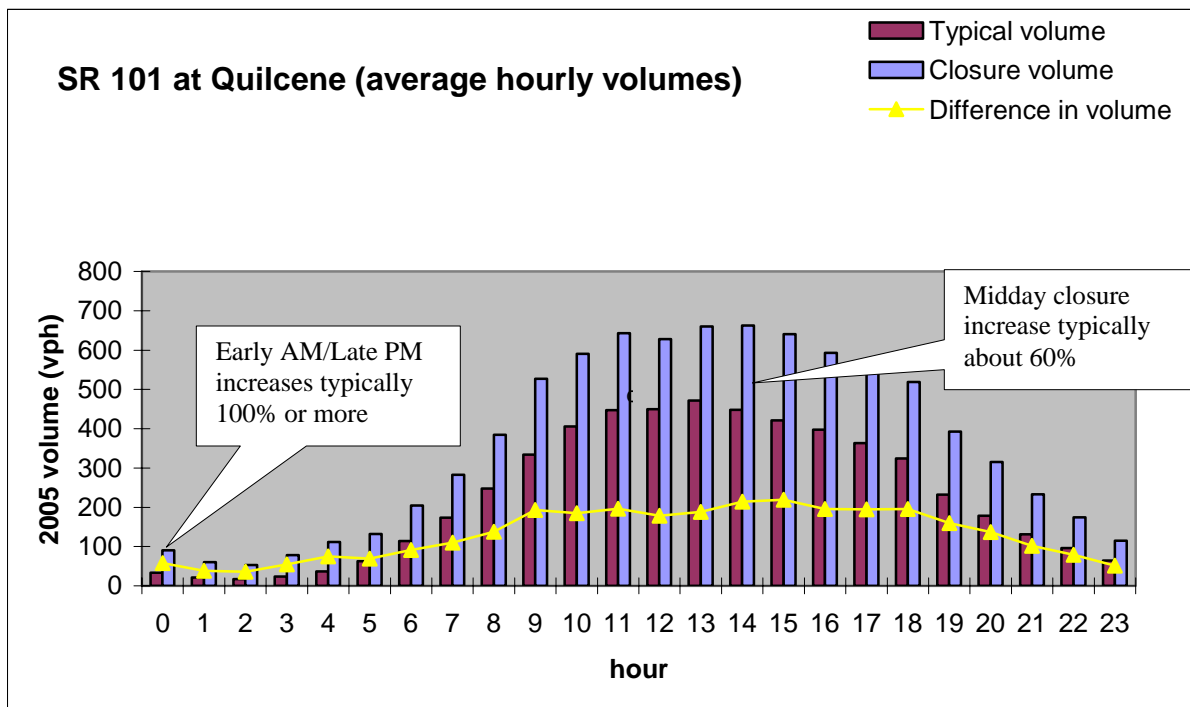
* Figures are given in vehicle equivalent trips using observed average vehicle occupancies.

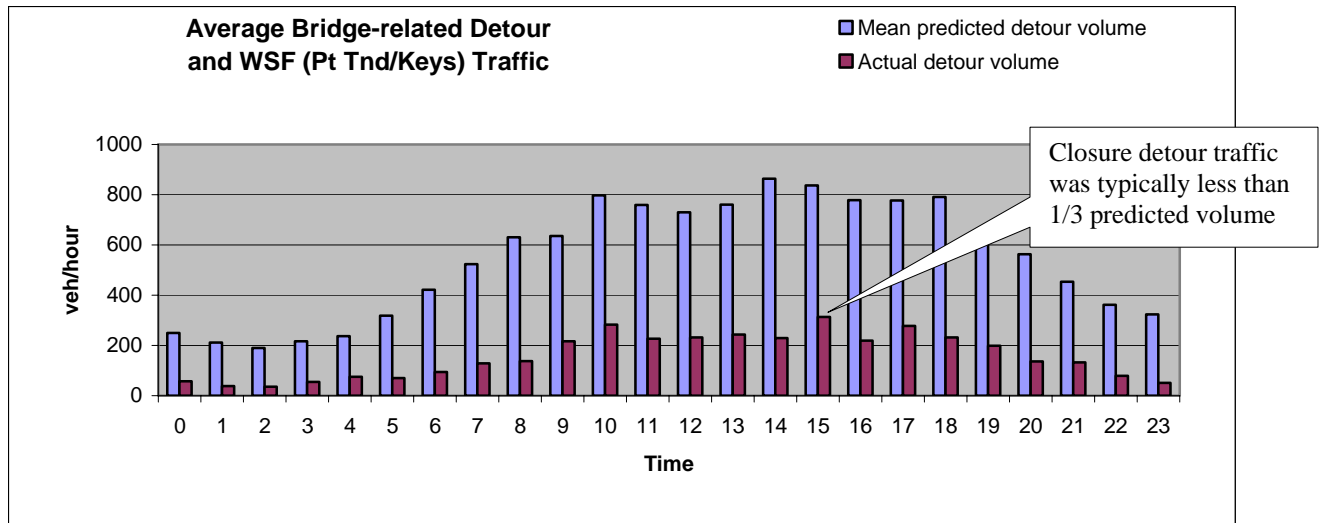
August 2005 Closure Analysis - Detours

US 101

Traffic counts on US 101 during the August 2005 closures ran about 60% higher than normal for the route between SR 104 near Quilcene, and SR 106 at the Skokomish Reservation. The peak hour average count near Quilcene averaged about 200 vehicles per hour (vph) higher during the closure. The increase in daily volume on closure days represented about 16 percent on average of the vehicle traffic expected to use the Hood Canal Bridge on those days. Detouring traffic volumes on weekdays (3400 vehicles per day) were nearly equivalent to that on weekends (2900 vehicles per day). However, bridge-related traffic represented a higher percentage of the weekday volume on US 101 since typical weekday traffic there is about 25 percent less than on weekends (4800 weekday vehicles per day vs. 6400 weekend vehicles per day).

The bridge-related traffic detected on US 101 during the closure was found to be less than 1/3 of that predicted using the revised forecasting method described (see page 11). This is not surprising, since trips can more easily be rescheduled or rearranged around closures that last only a few days. The ratio between predicted hourly volumes and actual hourly counts remained constant throughout the day.





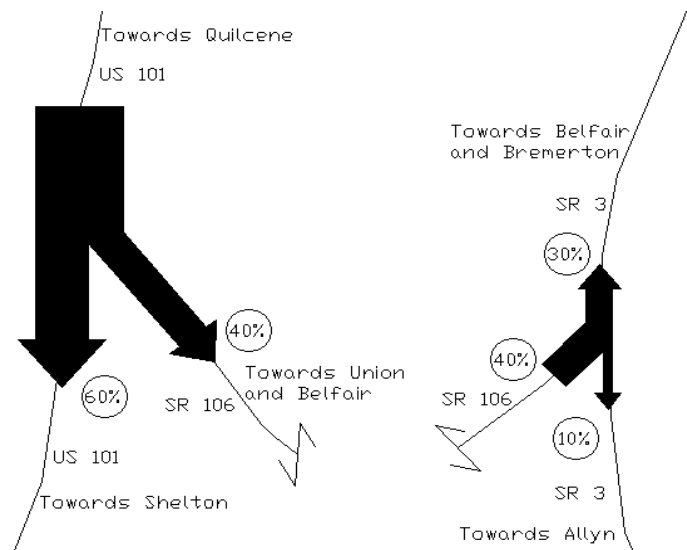
* The vehicle detour options are combined in this graph to be consistent with the predictive model.

Average traffic volume was monitored at specific locations on detour routes connecting US 101 to major destinations. The closure volumes averaged higher than normal at every location:

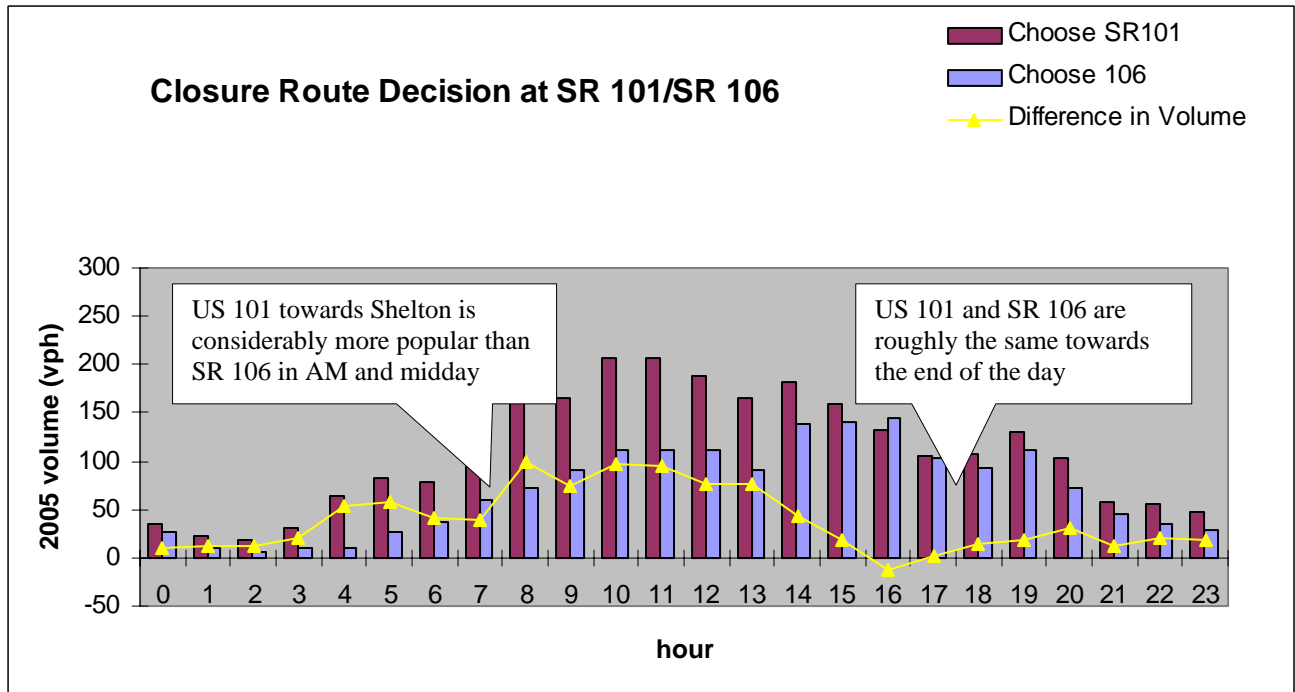
- US 101 north of SR 106 – 60% increase over normal volumes
- US 101 south of SR 106 – 20% increase over normal volumes
- SR 106 east of US 101 – 45% increase over normal volumes
- SR 3 north of SR 106 – 15% increase over normal volumes
- SR 3 south of SR 106 – 5% increase over normal volumes

The split in the detour traffic stream was also analyzed. Bridge-related traffic at the intersection of US 101 and SR 106 showed about 60% favoring US 101 towards Shelton, while the remaining 40% used SR 106 towards Belfair. The distribution of traffic at this split suggests that the difference in traffic at this split suggests that the difference in traffic during the closures was particularly marked in the morning hours. US 101 was considerably more popular than SR 106 in the morning and midday. In the afternoon and evening, traffic volumes were roughly equal on US 101 and SR 106 (see diagram at right).

Distribution of bridge-related, US 101 detour traffic

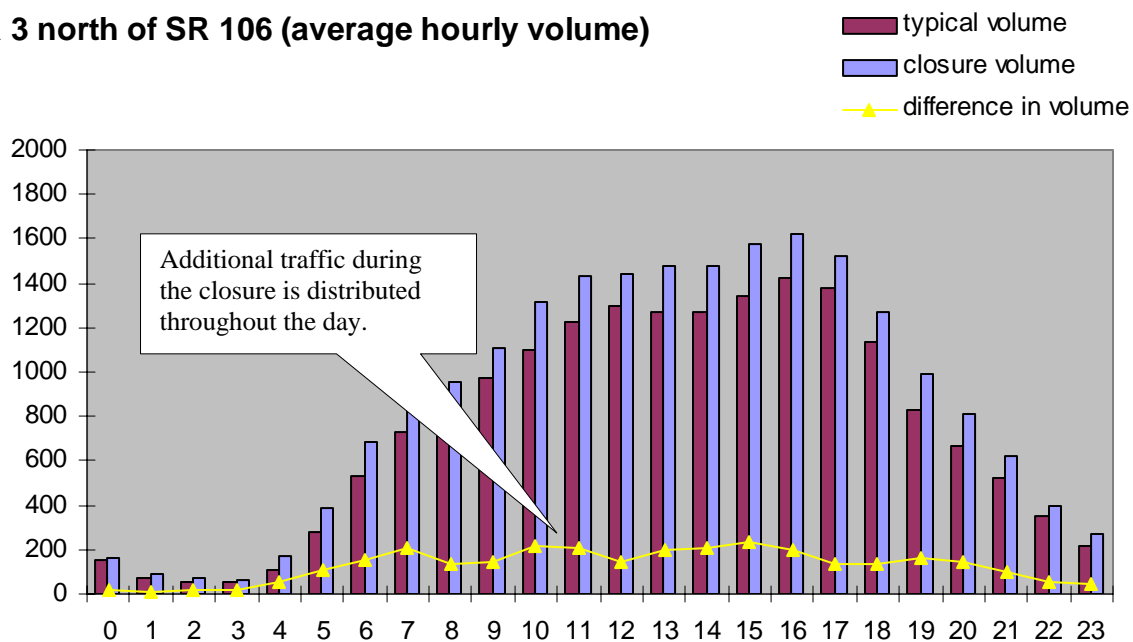


Of the 40 percent using SR 106, three times as many turned north towards Bremerton then turned south towards Alllyn (see diagram above).

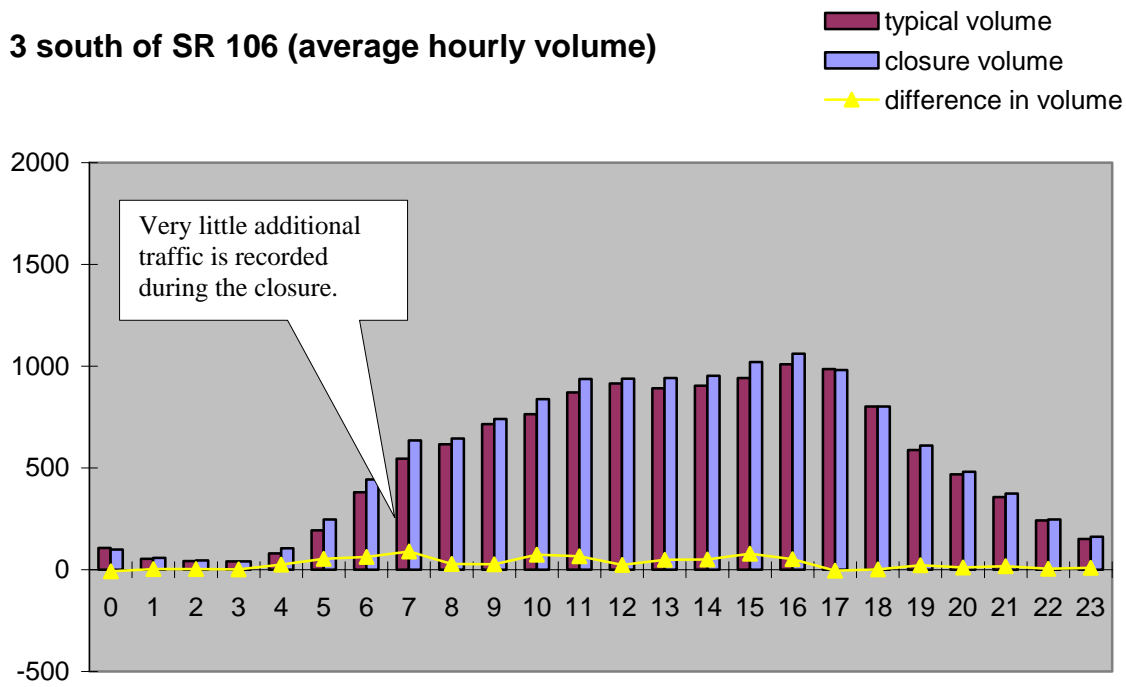


Even though 75 percent of the travelers who chose to use SR 106 turned north towards Bremerton at the SR 106 and SR 3 intersection, the increase in traffic above the background levels was not dramatic. The increase above normal background traffic south of the intersection was considerably less. Time of day did not have any affect on this pattern, as shown in the following graphs.

SR 3 north of SR 106 (average hourly volume)

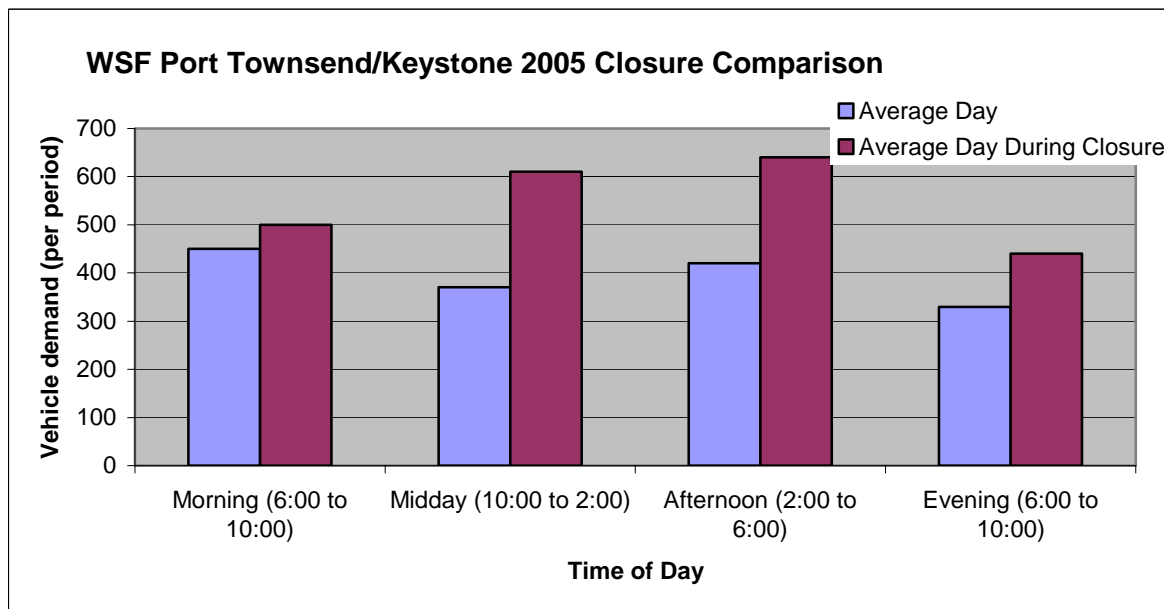


SR 3 south of SR 106 (average hourly volume)



WSF Port Townsend/Keystone Route

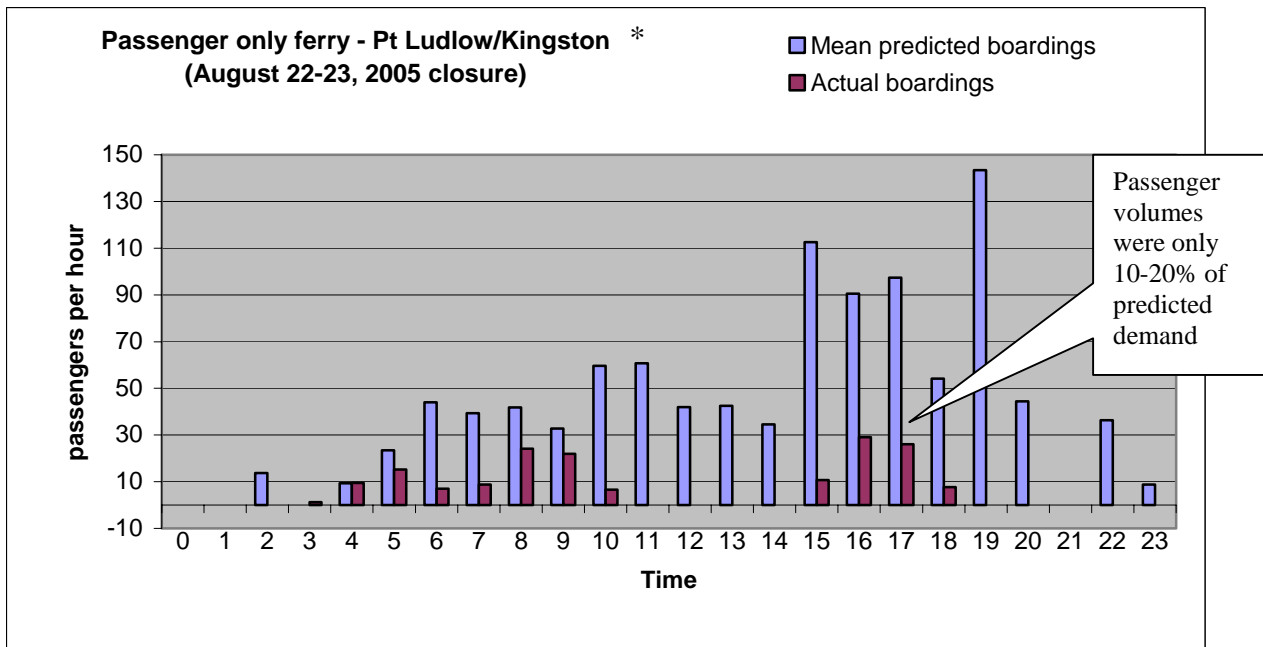
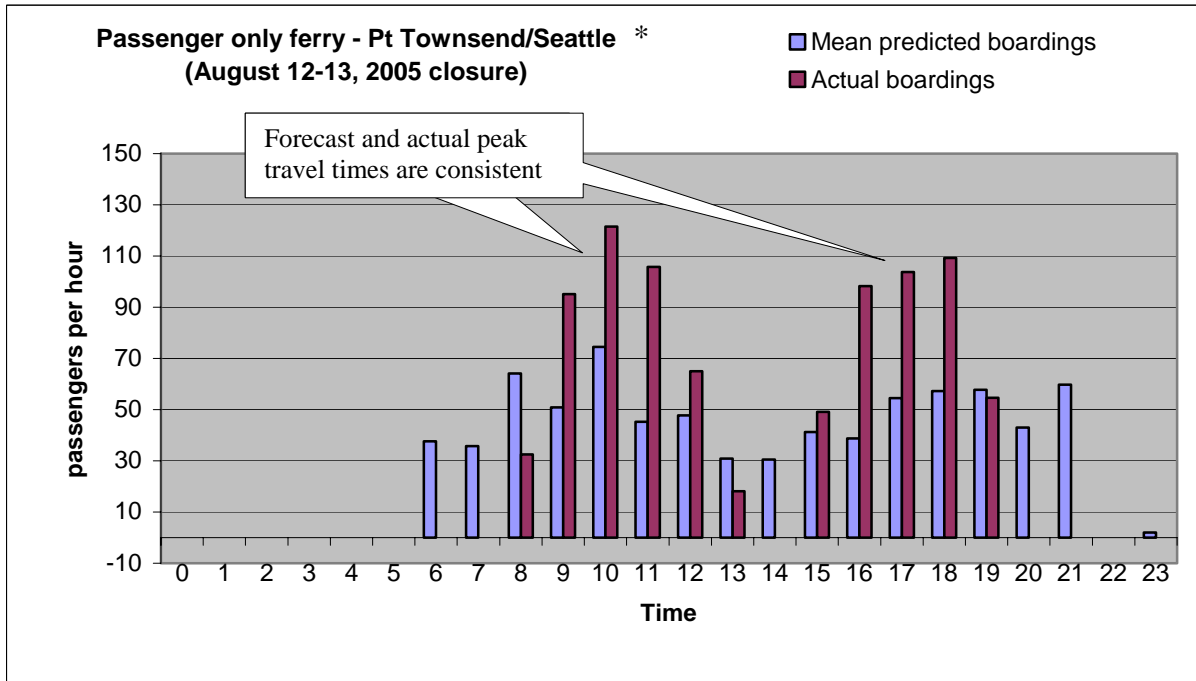
An increase of about 600 vehicles per day was recorded on this route on each of the closure days. Because weekend days in August typically carry about 40% more vehicles than August weekdays, the percentage increase in traffic on weekdays was more pronounced (40% increase for weekdays vs. 25% increase for weekends). On average, the daily boarding record show that the increase was most pronounced during the afternoon and evening hours. Limitations at the docks do not allow for providing higher capacity boats on the route during much of the day, so additional early morning and late evening departures were added. However, these additional sailings were poorly utilized, though they did allow for some overload vehicles to complete their trips. The data shows that the Port Townsend/Keystone route attracted an average of 3% of the total bridge-related vehicle demand during the two closures.



August 2005 Closure Analysis - Passenger-only Ferry/POF

Special passenger-only ferry service during the closure was limited to infrequent runs connecting Port Townsend/Seattle and Port Ludlow/Kingston. Comparisons were made between actual boardings and those predicted using the revised forecast method described on page 11 of this report. Predictions were adjusted for seasonal variation. The results showed that passenger volumes on the Port Ludlow/Kingston route were very low (between 10 and 20 percent of predicted passenger demand for peninsula travel to and from Kingston). According to observers at the time, the low passenger volumes may be due to inadequate marketing, the inability to reserve a space ahead of time, inconvenient travel times, or limited landside connections at the docks.

The special Port Townsend/Seattle passenger-only route accommodated volumes that were approximately equal to the mean prediction for Seattle-based passenger demand. This result suggests that providing service to centralized destinations does contribute to the success of passenger-only services. Demand for the Seattle service was consistent with the forecast hourly volume distribution, and was well distributed through the day.

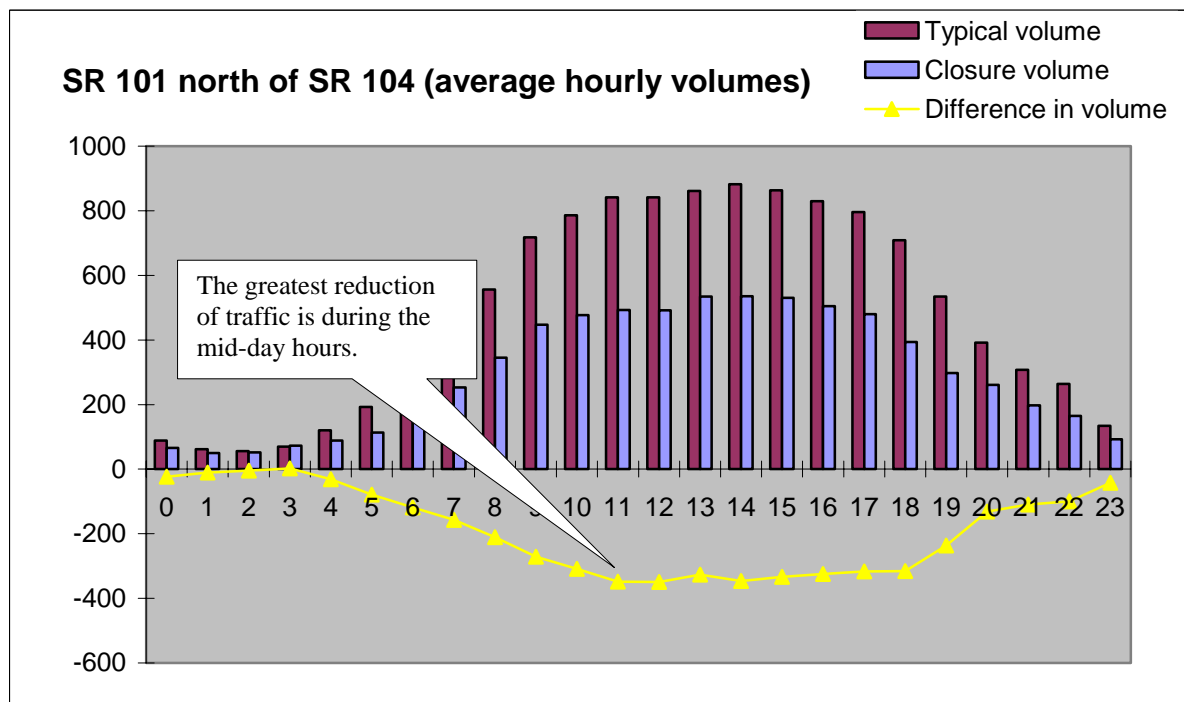


* To simulate actual hourly demand for this service, passenger boardings shown have been distributed over the hours immediately adjacent to boat departures.

August 2005 Closure Analysis - Deferred Trips

The number of deferred trips during the August 2005 closures can be calculated by subtracting total number of trips using the US 101 detour, the WSF Port Townsend/Keystone, and the passenger-only ferry service from the normal daily traffic volumes. This calculation showed that three times as many trips were deferred as predicted using the revised forecast method described on page 11 of this report (predictions were adjusted for seasonal variation). This can be explained primarily by the short duration of the closure, since it's easier to reschedule a trip around a two-day closure than an eight-week closure.

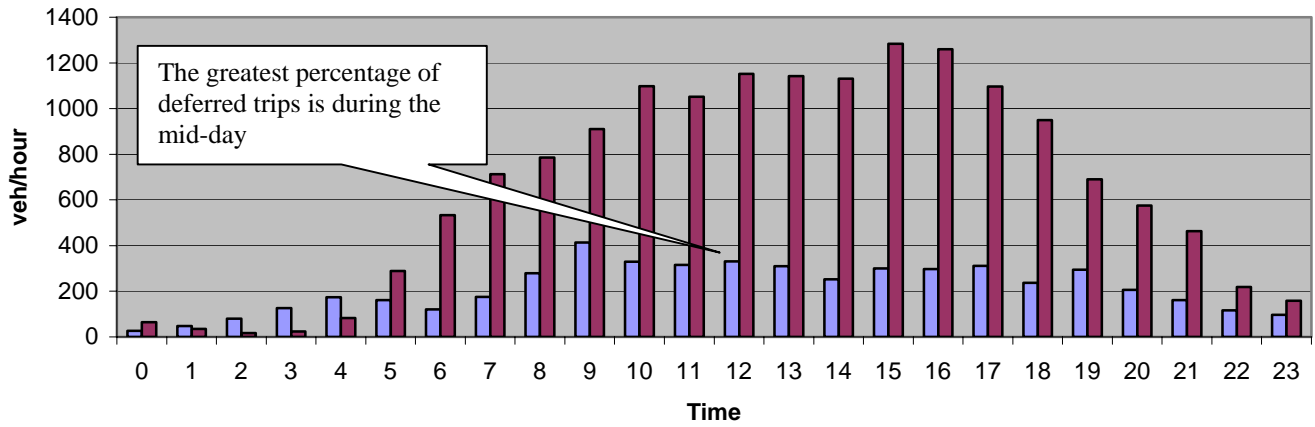
Data from the US 101 counter located north of SR 104 (counter #7) allows us to examine the deferral rate of those bridge-related trips based in Clallam County since all such trips must pass over this counter. It can be seen that nearly every hour of the average closure day recorded a lower volume at this location than normal (see graph below).



The daily average percent reduction was 34 percent. However, hourly percent reduction varied, depending on the time of day. Compared to normal volumes, the percent reduction was greatest during the mid-day hours and lowest in early morning and late evening. This phenomenon most likely reflects the shift in travel to these early and late hours.

**Deferred (rescheduled) Trips
(average of both directions)**

■ Mean predicted trip deferrals
■ Actual trip deferrals



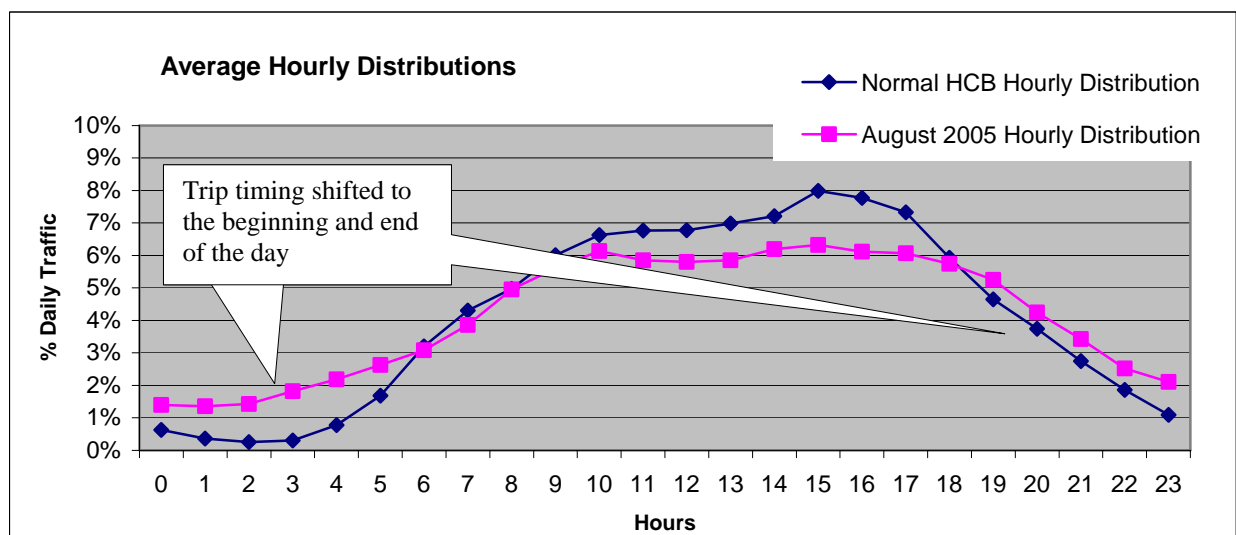
Mitigation Forecast Update Review

An update to the Hood Canal Bridge Travel Behavior Analysis (September 2002) was performed as part of this analysis to improve confidence in, and flexibility of, the result. The Average Daily Traffic (ADT) forecast and hourly distribution was updated based on travel information collected during the August 2005 closures and a review of traveler survey. The focus of this effort was to determine a high and low value for each variable. Values are based on reasonable assumptions about the range of effectiveness of various strategies, such as marketing or the ability to actually reschedule a trip. These values are then assigned to either the “High POF” or the “Low POF” forecast based on their expected influence on a traveler’s choice to use the Shine/Port Gamble passenger-only ferry.

August 2005 Hourly Distribution

Data recorded on SR 101 at Quilcene during the August 2005 closure suggests that travelers adjust the times that they travel when using longer routes. The US 101 detour, WSF Port Townsend/Keystone, and the proposed Shine/Port Gamble passenger-only ferry route will all be longer routes than crossing the Hood Canal Bridge. Therefore, the hourly distribution observed at Quilcene, smoothed by averaging to account for the small sample of days, was adapted for use in the forecast update.

The August 2005 closure indicates a shift of traffic volumes towards the early morning and late evening hours, and away from mid-day hours. This effect is also expected to be true for detour options including ferries. The shift in travel time was observed for all days and in both directions of travel.



Average Daily Traffic (ADT) during closure

The September 2002 report relies fundamentally on prediction of daily traffic demand in 2006 based on 1998 volumes and a high growth rate reported for use in the SR104 Planning Study

EIS, which was underway at that time. The average growth in daily traffic between 1998 and 2003 has been observed to be substantially less. New calculations using the latest figures suggest more accurate daily traffic figures during the 2009 closure would be about 20% less than that reported in the September 2002 report. For this update, this new growth assumption becomes a part of both the “low POF” and “high POF” forecasts.

Passenger-only ferry (POF) Forecast Revisions

The September 2002 report also presented a rationale for determining the origins, destinations, and hourly volumes to expect during the planned 2006 Hood Canal Bridge Closure. The projects were based on responses to two traveler surveys completed in 1998 and 2001. Question 29 of the 2001 survey asked respondents to indicate the importance of having a vehicle on their trip. The 2002 analysis is very optimistic about the Shine/Port Gamble passenger-only ferry (Shine POF) operation. It assumed that only those who indicated that a vehicle was “very important” on the 2001 survey (38 percent of respondents) would not use the POF. This assumption tends to increase the predicted passenger loading and relies on the notion that those responding that a vehicle was “important” to their trip would relinquish the vehicle during the closure.

The current revision introduces more pessimism into the calculation. The “low POF” forecast, indicative of limited marketing and marginal POF service, assumes that none of those who indicated a vehicle was either “important” or “very important” would use the passenger-only ferry. The “high POF” forecast, indicative of superior marketing and POF service, assumes that all of those who responded that the vehicle was “important” and half of those who responded that the vehicle was “very important” would use the POF.

Deferred Trips Forecast Revisions

The proportion of trips in this forecast category is based on the results of a single question in the 1998 traveler survey. The question read “if you knew before you took this trip that the Hood Canal Bridge was going to be closed, what would you have done?” Although stated elsewhere in the survey, the duration of the closure was not clearly stated as part of the question. Therefore the potential exists that some number of the responses may have been categorized incorrectly. In order to bracket the forecast assumption surrounding this variable, the updated forecast assumes that all of those responding as “reschedule” will defer their trip. These respondents are added to the “low POF” forecast since a higher number of deferred trips will reduce the passenger load on the ferry. The revised “high POF” forecast assumes that half of those responding “reschedule” will not be able to defer their trip and use the passenger-only ferry.

Trip Proximity and Frequency Forecast Revisions

Assumptions about the importance of trip proximity, weekly trip frequency, and the popularity of the Shine POF were part of the forecast described in the September 2002 report. Specifically, those trips having origins or destinations close to the bridge, and occurring more frequently, were assigned a higher likelihood of using the Shine POF. Adjustments were made to these assumptions as part of this revision that accentuates the effect of proximity and frequency in the prediction model. The result is that the less frequent trips having distant origins and destinations are less likely to use the Shine POF, while the more frequent trips having origins and destinations in close proximity to the bridge are more likely to use the Shine POF.

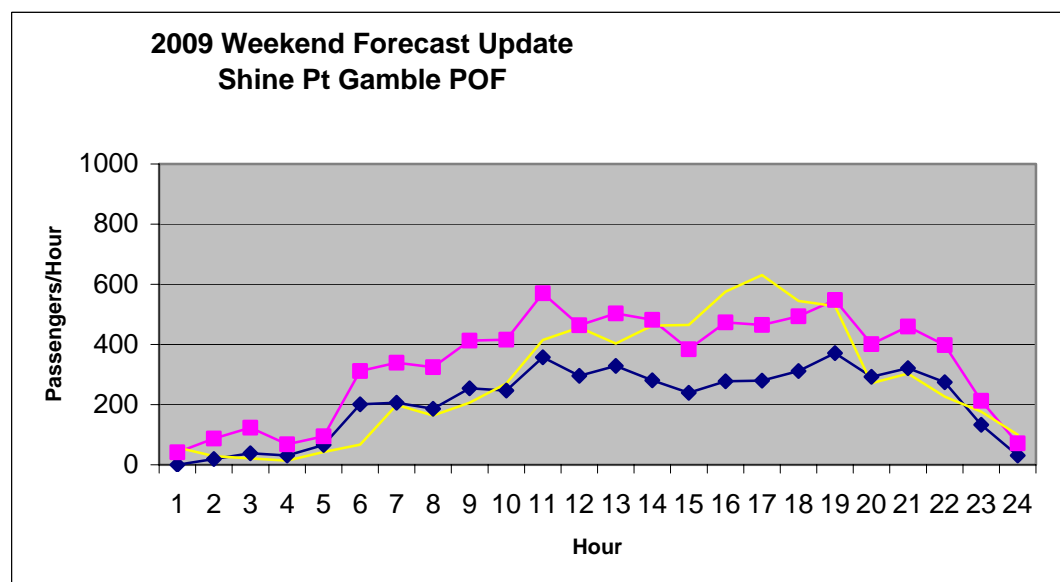
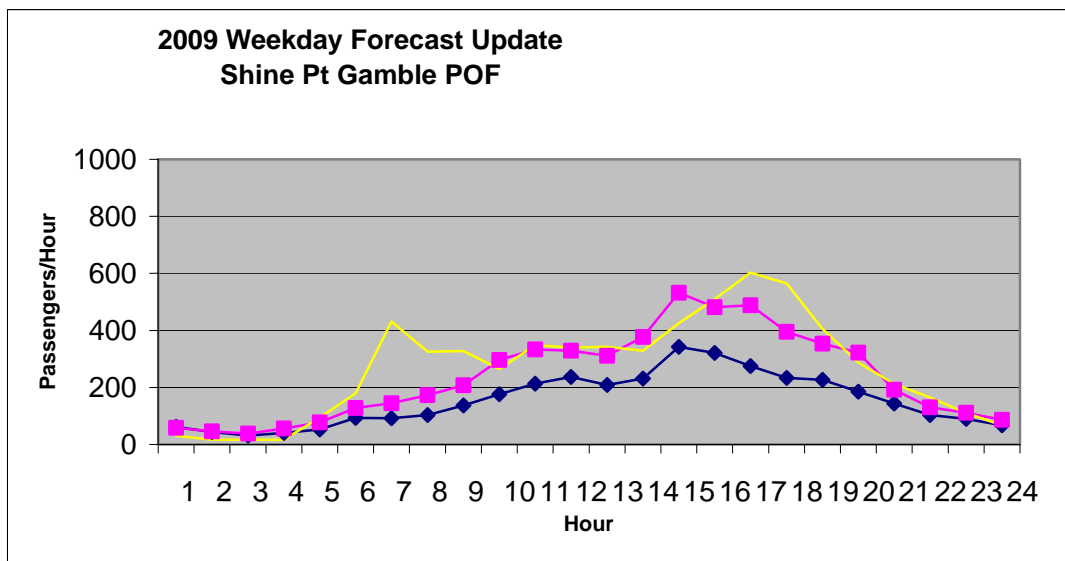
Mitigation Forecast Update Results

This update revises the September 2002 report by providing a range of volumes for each hour of the day. The range of hourly values for each of the primary trip categories (POF, detour, and deferred trip) is provided in the graphs on the following pages.

Recommendations

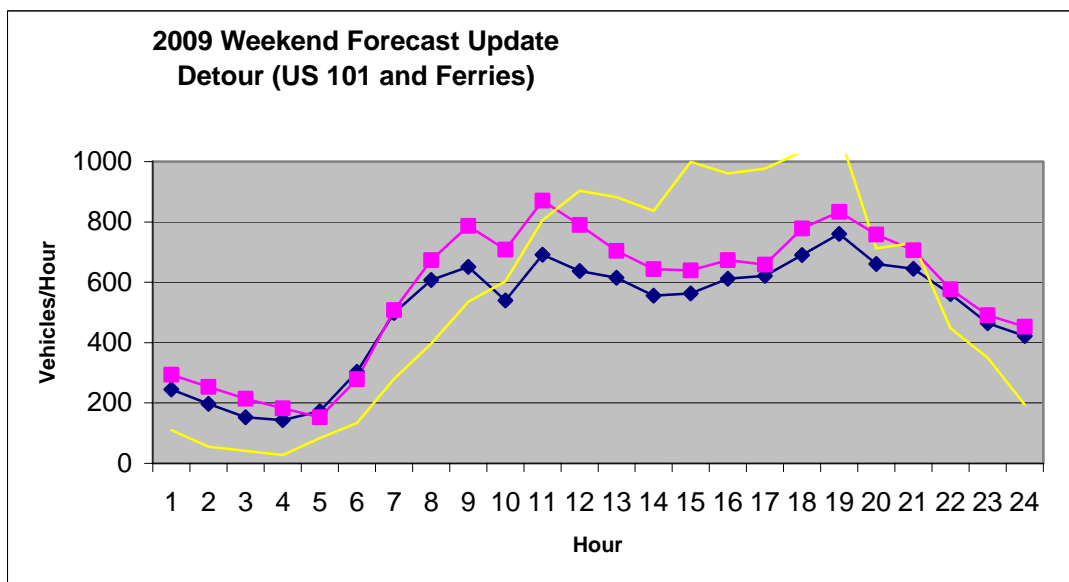
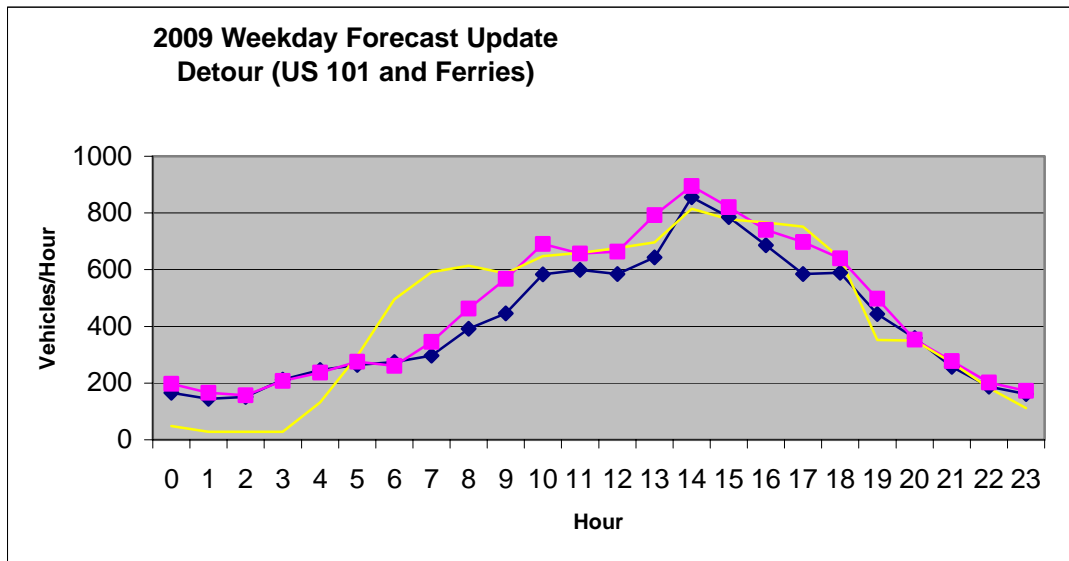
The August 2005 bridge closure presented an opportunity to observe traveler response to a relatively short-term closure. The following recommendations are based on lessons learned during this short-term closure that would reasonably apply to a similar, but longer-term, closure.

- Use a range of forecast traffic volumes, like those available in the forecast revision described here, when determining the scale and type of mitigation activities to provide.
- Reduce forecast uncertainties by updating specific bridge user survey information.
- To mitigate bridge closure, use passenger-only ferry routes that serve central locations to reduce uncertainty about the success of these routes.
- Vehicle capacity intended to serve peak bridge-related demand on the Port Townsend/Keystone route is best concentrated in the afternoon and evening hours.
- Adding early morning and late evening sailings on Port Townsend/Keystone route is unlikely to substantially reduce congestion on US 101. Although a longer closure would certainly encourage more use then, expect that these sailings will mainly serve as overload capacity.
- At the US 101/SR 106 intersection – expect that bridge-related traffic traveling US 101 will split 60% US 101 (towards Shelton)/40% SR 106.
- At the SR 106/SR 3 intersection – expect that bridge-related traffic traveling on SR 106 will split 75% SR 3 north/25% SR 3 south.



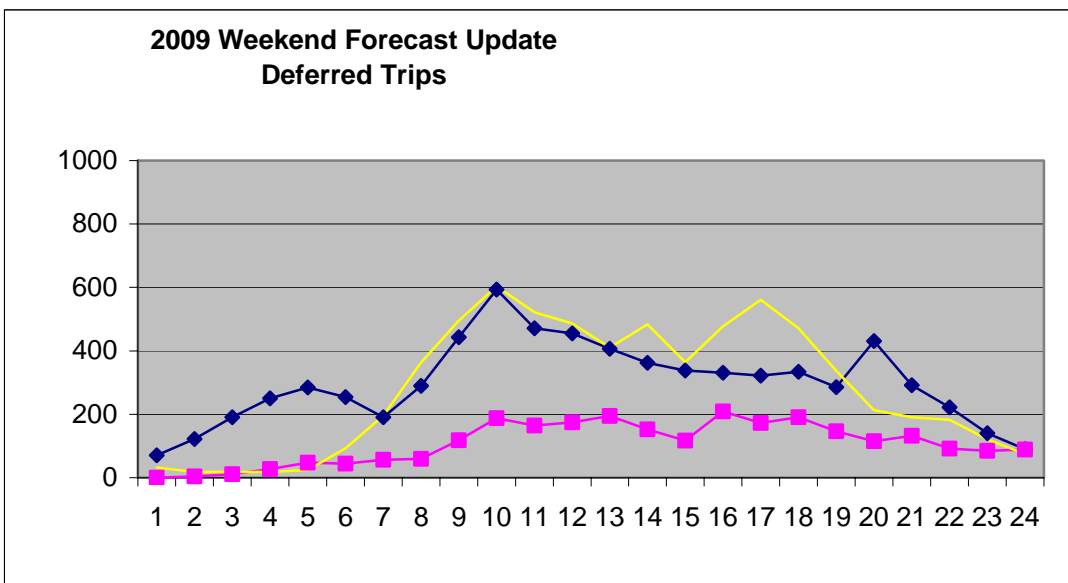
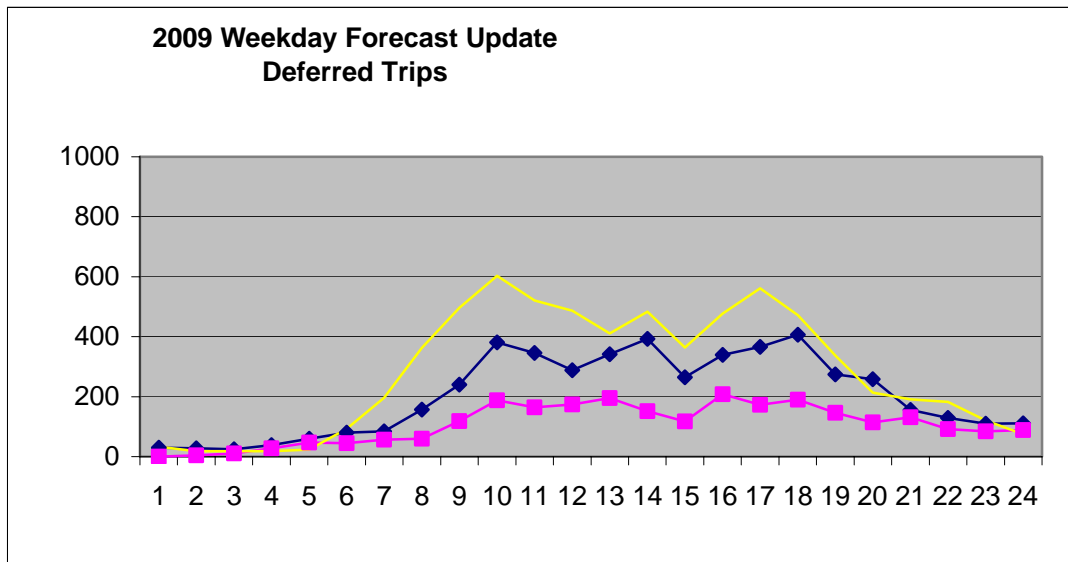
Legend

- "High POF" revised forecast
- "Low POF" revised forecast
- Original Forecast (September, 2002)



Legend

- "High POF" revised forecast
- "Low POF" revised forecast
- Original Forecast (September, 2002)



Legend

- "High POF" revised forecast
- "Low POF" revised forecast
- Original Forecast (September, 2002)